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Final Environmental Impact Statement and Proposed California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project

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Volume III: Appendices H to O

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Prepared for:

BUREAU OF LAND MANAGEMENT
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WEED CONTROL PLAN
THE LUCERNE SOLAR
SAN BERNARDINO COUNTY, CALIFORNIA

Revision 1 dated January 14, 2010

Chevron Energy Solutions
345 California Street, 18th Floor
San Francisco, CA 94104

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List of Acronyms and Abbreviations

°F	degrees Fahrenheit
BLM	Bureau of Land Management
BMP	Best Management Practices
Cal-IPC	California Invasive Plant Council
CDCA	California Desert Conservation Area
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
DPR	Department of Pesticide Regulation
EPA	U.S. Environmental Protection Agency
FLPMA	Federal Land and Policy Management Act
GIS	geographic information system
MOU	Memorandum of Understanding
mph	mile(s) per hour
MW	Megawatt
MWMA	Mojave Weed Management Area
NPPA	Native Plant Protection Act
PAR	pesticide application record
PEIS	Vegetation Treatments Using Herbicides on Bureau of Land
PPA	Plant Protection Act of 2000
Project	Lucerne Solar Project
PUP	pesticide use proposal
U.S.C.	U.S. Code
USDA	U. S. Department of Agriculture

SECTION 1 INTRODUCTION

1.1 PLAN PURPOSE

This weed control plan is intended to provide: (1) monitoring, preventative, and management strategies for weed control during construction activities at the Lucerne Solar Project (Project); (2) control and management of weeds in areas temporarily disturbed during construction where native seed will aid in site revegetation; and (3), a long-term strategy for weed control and management during the operation of the project.

1.2 WEED DEFINITION

The term ''noxious weed'' is defined in the federal Plant Protection Act (7 *U.S. Code* [U.S.C.] 7701 *et seq.*) as any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products); livestock, poultry, or other interests of agriculture; irrigation; navigation; the natural resources of the U.S.; the public health; or the environment. Weeds are typically characterized by non-native plants that aggressively colonize new areas and can grow to dominate native plant communities if uncontrolled. Weeds could alter physical or chemical soil conditions, out-compete native vegetation, and dominate the landscape to the detriment of native plants and wildlife. Weeds could also preempt ground and surface water resources, compromise agricultural operations, conflict with recreational values, create fire hazards, and compromise aesthetic values of native or urban landscapes. Weeds are often quick to colonize disturbed areas, including construction sites, roadsides, irrigated sites, or any other area with altered hydrology, soil structure, or soil chemistry.

1.3 OBJECTIVES

This plan lists and assesses weeds that do or could potentially occur in the project vicinity. It also provides a target list of weeds that will be controlled; survey methods for weed presence during construction and operation; weed control methods; and reporting requirements. The appropriate objectives for controlling potential weed infestations at the project site will be defined on a case-by-case basis.

Weed management objectives for the project include the following:

- Prevention: This objective is aimed at preventing infestation expansion and spread, and may be conducted with or without attempts to reduce infestation density. Prevention focuses on halting spread until suppression or eradication can be implemented, and is practical only to the extent that the spread of seeds or vegetative propagates can be prevented.

- Eradication: This control objective is aimed at the elimination of individuals of a particular species within a specified area. This will be the goal for most weed species at the project, and is appropriate where the weed is of considerable economic and environmental concern and the population size is manageable.

- Suppression: This objective is aimed at reducing current infestation density, but not necessarily directed at reducing the total area or boundary of the infestation. This applies to many widely distributed, high-density weeds where eradication is not feasible.

1.4 MANAGEMENT ROLES

Lucerne Solar is responsible for implementing this plan. It is anticipated that Lucerne Solar's contractors and other designees responsible for implementing components of this plan will include the following:

- Contractor(s) – Contractual language will be included in construction documents and ongoing maintenance contracts to ensure that contractors, subcontractors, vendors, maintenance personnel and other parties, performing either construction or ongoing maintenance or repairs at the project site, abide by and implement the provisions of this plan. Implementing the construction provisions of this plan will be a part of construction contracts. Restoration contractors, landscape contractors, and other specialists will implement specific provisions of this plan either as subcontractors to the general construction contractor, or through independent contracts with Lucerne Solar.
- Construction Manager – The construction manager will have ultimate oversight of the construction contractor to ensure compliance with the provisions of this plan.
- Environmental Compliance Adviser – Lucerne Solar will designate an environmental compliance adviser to provide oversight of construction and maintenance practices and ensure compliance with the provisions of this plan. The environmental compliance advisor will be contracted directly by Lucerne Solar and will coordinate with the construction manager to ensure contractor compliance with environmental requirements for construction and with the power plant operator to ensure compliance during ongoing maintenance activities.
- Bureau of Land Management – As the administering land management agency, the Bureau of Land Management (BLM) will provide ultimate approval of the contents of this plan, and compliance oversight of its provisions. BLM will provide timely review of work products including this plan, modifications or amendments to this plan, and subsequent reports as required in this plan.

SECTION 2 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

SECTION 2 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

2.1 FEDERAL LAWS AND REGULATIONS

2.1.1 Federal Noxious Weed Act Of 1974

The Federal Noxious Weed Act of 1974 (7 U.S.C. §§ 2801-2814, January 3, 1975, as amended 1988 and 1994) provides for the control and management of non-indigenous weeds that injure, or have the potential to injure, the interests of agriculture and commerce, wildlife resources, or the public health. It gives the Secretary of Agriculture broad powers in regulating transactions in and movement of noxious weeds. The act states that no person may import or move any noxious weed identified by regulations of the Secretary of Agriculture into or through the U.S., except in compliance with the regulations, which may require that permits be obtained. The act also requires each federal agency to develop a management program to control undesirable plants on federal lands under the agency's jurisdiction, and establish and adequately fund the program. Some of the provisions of this act were repealed by the Plant Protection Act of 2000 (PPA), including U.S.C. 2802 through 2813. However, Section 1 (findings and policy) and Section 15 (requirements of federal land management agencies to develop management plans) were not repealed (7 U.S.C. 2801 note; 7 U.S.C. 2814).

2.1.2 Plant Protection Act of 2000

The Plant Protection Act of 2000, as amended (7 U.S.C. 7701-7786) states that the detection, control, eradication, suppression, prevention, or retardation of the spread of plant pests or noxious weeds is necessary for the protection of the agriculture, environment, and economy of the U.S. This act defines the term ‘‘noxious weed’’ (7 U.S.C. 7702 § 403) to mean any plant or plant product that can directly or indirectly injure or cause damage to crops (including nursery stock or plant products), livestock, poultry, or other interests of agriculture, irrigation, navigation, the natural resources of the U.S., the public health, or the environment. This act specifies that the Secretary of Agriculture may prohibit or restrict the importation, entry, exportation, or movement in interstate commerce of any noxious weed if it is determined "that the prohibition or restriction is necessary to prevent the introduction into the [U.S.] or the dissemination of a plant pest or noxious weed within the [U.S.]," and authorizes the issuance of implementing regulations. Subsequent regulations implemented by the Noxious Weed Control and Eradication Act of 2004 amended the PPA.

2.1.3 Noxious Weed Control and Eradication Act of 2004

The Noxious Weed Control and Eradication Act of 2004 (P.L. 108-412) amended the PPA by adding a new subtitle, "Subtitle E--Noxious Weed Control and Eradication" (7 U.S.C. 7781- 7786), which authorizes the Secretary of Agriculture to establish a program to provide financial and technical assistance to public and private landowners for the control or eradication of noxious weeds. This act defines noxious weeds and removes references to statutes that were repealed upon enactment of the PPA. This act prohibits the movement of a federally designated noxious weed into or through the U.S. unless a permit is obtained for such movement and the movement is consistent with the specific conditions contained in the permit. This act specifies that such movement, under conditions specified in the permit, may not involve a danger of dissemination of the noxious weed in the U.S.; otherwise such a permit will not be issued.

2.2 STATE AND LOCAL LAWS AND REGULATIONS

2.2.1 Native Plant Protection Act

The Native Plant Protection Act (NPPA) of the 1977 Fish and Game Code (Sections 1900 through 1913) directed the California Department of Fish and Game (CDFG) to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the CDFG Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take.

2.2.2 California Food and Agricultural Code

Various portions of this code pertain to weed management. Specifically, Food and Agricultural Code Section 403 states that the Department of Food and Agriculture should prevent the introduction and spread of injurious insect or animal pests, plant diseases, and weeds. Under Sections 7270 through 7224, the California Commissioner of Agriculture is granted the authority to investigate and control weeds, and specifically to provide funding, research, and assistance to weed management entities, including eligible weed management areas or county Agricultural Commissioners, for the control and abatement of weeds according to an approved integrated weed management plan.

California Food and Agriculture Code Section 5101 and 5205 provides for the certification of weed-free forage, hay, straw, and mulch. This portion of the code recognizes that many weeds are spread through hay, straw, and mulch, used for both forage and ground covers. The code allows for in-field inspection and certification of crops to ensure that live roots, rhizomes, stolons, seeds, or other propagative plant parts of weeds are not present in the crop to be harvested. Certified weed-free forage, hay, straw, and mulch are required on BLM land. Mulch and/or hay bale materials used for erosion control at the project will be required to meet this certification.

2.2.3 San Bernardino County General Plan

San Bernardino County has a General Plan that is the fundamental policy document for the unincorporated, privately-owned lands of San Bernardino County. It is adopted by the Board of Supervisors, and contains the goals, policies, and implementing actions for a variety of issues including natural and man-made hazards and natural and man-made resources. The purpose of the General Plan is to set the framework for decision-making regarding the County's long-term development and utilization of resources, and provides the rules by which land can be developed. The General Plan includes goals and policies to preserve rare and endangered species and protect areas of special habitat value; and to establish plans for long term preservation and conservation of biological resources (San Bernardino County Plan at II-C1-4). Proposed development projects must be compatible with policies set forth in the Biotic Resources and Resources Conservation overlays which identify special management for the protection of habitat that supports important flora and fauna in the unincorporated areas of the County.

SECTION 2 APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

2.3 STANDARDS

This section contains discussion of the conservation and management plans that are relevant to weed control at the project. These plans were created in response to either regulatory mandates, or internal agency guidance. This section contains a summary of these plans.

2.3.1 Conservation and Management Plans

Bureau of Land Management

The BLM has prepared a Programmatic Environmental Impact Statement (PEIS) for 17 Western States that describes vegetation treatments using herbicides for weed control. This document is the result of extensive public involvement and outlines the specific decisions, standard operating procedures, and mitigation measures for the use of herbicides on BLM lands. The selected alternative of the PEIS identifies the active herbicidal ingredients approved for use on BLM land, and the herbicidal ingredients that are no longer approved for use. The Record of Decision for the PEIS defers to approved land use plans the determination of areas to be treated through BLM's integrated pest management program, and makes no land use or resource allocations in this regard.

Appendix B, Herbicide Treatment Standard Operating Procedures, of the PEIS (Appendix A of this plan), specifies management of weeds and application of pesticides on BLM land. Table B-1, Prevention Measures, specifies avoidance measures to limit weed infestation, and Table B-2, Standard Operating Procedures for Applying Herbicides, provides details on herbicide application. The procedures listed in these appendix and tables are incorporated as requirements of this plan.

California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) comprises one of two national conservation areas established by Congress at the time of the passage of the Federal Land and Policy Management Act (FLPMA). The FLPMA outlines how BLM will manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan (BLM 1980). The document provides no specifics about weed management, but specifies management strategies for broad areas of the plan boundary.

Mojave Weed Management Area MOU

The Mojave Weed Management Area (MWMA) was established in a Memorandum of Understanding (MOU) in 2002 as a coordinated approach among Federal, State and local agencies to improve the effectiveness of weed management efforts in the Mojave Desert. The focus of the MOU is on the exclusion, detection, eradication, and suppression of weeds, with a priority placed on the species listed as weeds by the California Department of Food and Agriculture and other species of local significance as they are identified. The signatory agencies and organizations will cooperate in developing coordinated work plans and seeking funds to support the activities of the MWMA. In addition, public education on weed identification, prevention, and control will be a primary goal of the MWMA. The geographic scope of the MWMA includes the portion of San Bernardino County in the Mojave Desert Resource

Conservation District, the portion of Inyo County east of Death Valley National Park, all of Death Valley National Park, and all of Joshua Tree National Park. As part of the MOU, the MWMA partners pledge to educate the public about weeds, their identification, prevention, and methods of control, and promote the control and prevention of weeds on both private and public land.

SECTION 3 WEED ASSESSMENT

3.1 WEED SPECIES

Weeds are defined for this document as species of non-native plants that are included on the weed lists of the California Department of Food and Agriculture (CDFA 2007), the California Invasive Plant Council (Cal-IPC 2006), the *MWMA*, or those weeds of special concern identified by BLM. A list of all invasive species that do or could potentially occur in the project vicinity is provided in Table 1.

3.2 FIELD SURVEYS

Weeds were searched for during the biological field surveys. During protocol surveys, surveyors made lists of all plant species encountered in the field, taking special note of the distribution and abundance of non-native species that are classified as weeds on the site. The same procedure was used in surveys of the 1-mile buffer.

3.3 KNOWN AND POTENTIAL WEED OCCURRENCES

Several weeds are known to occur in the project vicinity. The weed of highest concern in the general area is Sahara mustard (*Brassica tournefortii*) because of the potential of this species to spread and impact native plant communities. Other weeds of concern are also present. Red brome (*Bromus madritensis ssp. rubens*) and russian thistle or tumbleweed (*Salsola tragus*). Table 1 lists potentially occurring invasive species, and identifies which species were observed during site surveys. Each invasive species has a rating based on the California Invasive Species Council rating system, and the CDFA.

SECTION 4 WEED MANAGEMENT AREAS

Weed management will occur site-wide; however, specific areas will require unique management considerations depending on a range of factors described in this section.

4.1 TEMPORARY DISTURBANCE AREAS

The Project will be designed to minimize ground disturbances and resulting environmental impacts wherever practicable. Santa Fe Fire Trail will be the main roadway used for site access. The number of service roads within the site for access and maintenance will be kept to a minimum and specifically located to provide main routes for quick access to the site for construction, maintenance, and operations. Culverts will be installed in a limited number of locations, as necessary, for crossing of natural washes. Site layout for the Project will be based on avoiding major washes and minimizing surface disturbing activities in order to preserve intact soil crusts on site.

Weed management issues at temporary construction areas include the fact that soil disturbance during construction and temporary use will create habitat well suited to disturbance-adapted invasive species and, therefore, measures to minimize the potential for weed introduction by personnel and equipment will be needed.

Potential areas meeting these criteria are described below. Other temporary disturbance areas created during construction will follow a similar weed management strategy as those areas outlined below. Weed management measures for these areas, including monitoring frequency, target weed species, and control methods, are included in this plan.

4.2 PERMANENTLY DEVELOPED AREAS

The areas describe in this section would be permanently developed, but could support weedy species along peripheral disturbed areas and function as seed reservoirs to adjacent natural habitats if not managed.

Project construction will occur in two phases beginning in the northeastern corner of the site and moving south and west. Phase I development includes the northeastern section of the Project area down to the Zircon Road, the portion of the site bordered on the north by Zircon road and on the east by Santa Fe Fire Trail and the first phase development area West of Sante Fire Trail. Phase II includes the expansion of the Project to portions of land located both southwest and west of Phase I in the area West of Santa Fe Fire Trail. Due to the modularity of solar photovoltaic farms, construction for both phases will occur in incremental steps with sections of the solar field becoming operational before significant construction work on other sections of the field. It is expected that site construction will begin during the fourth quarter of 2010

Soil disturbance during construction will create habitat well suited to disturbance-adapted invasive species, and continual movement within the area of personnel and heavy equipment will potentially introduce weed propagules. The area will require ongoing weed monitoring and maintenance during construction, and equipment will require cleaning at wash stations as specified below. During operations, equipment and personnel will continue to access the area for maintenance of the inverters and solar arrays. Precipitation and wash water runoff from the cleaning of photovoltaic panels will provide a water source that could support weed establishment and growth. These areas will require continual weed management and control.

Landscaped Areas

Landscaped areas will be present near the buffer zone where the Joshua trees are transplanted. Ongoing weed control in these areas is anticipated due to the soil disturbance and application of irrigation water.

Roads

Roadsides and the medians of unpaved service tracks are vulnerable to weed invasion. Roads often alter local hydrology; are subject to initial and ongoing disturbance during construction, maintenance, and use; provide topographic variation that could capture wind or waterborne seed; and may be subject to seed distribution from passing vehicles. Ongoing weed management will target roadside weeds.

Other Permanent Facilities

Peripheral areas throughout the facility are anticipated where conditions are suitable for weed establishment. This may include soils that have been cleared, compacted, or otherwise disturbed; areas where hydrology is altered, such as from increased drainage from developed areas; or areas where continued vehicle or foot traffic persist. Ongoing weed management will survey and target these areas for management to avoid creation of weed seed reservoir areas, which could affect adjacent undisturbed habitats.

SECTION 5 MONITORING AND SURVEY METHODS

5.1 WEED IDENTIFICATION

Monitoring and removal of weeds requires skill and training in plant identification. Training in plant identification and field manuals with photographs of native desert plants and of common weeds will be provided to field staff including biological monitors, weed abatement contractors, plant operators and staff, and construction workers. Online resources that are available including the following:

- The University of California digital library at http://www.calflora.org/ contains species information and an extensive photo collection.
- The California Invasive Plant Council website is at http://www.cal-ipc.org. This website contains an invasive plant database, plant profiles, and extensive other information on invasive plants and control.
- The U.S. Department of Agriculture (USDA) National Invasive Species Information Center is at http://www.invasivespeciesinfo.gov/. This website has information on invasive species and links to the extensive USDA PLANTS database (http://plants.usda.gov/), with species profiles and photographs.
- The *MWMA* has weed management goals to protect and enhance biodiversity, water resources, reduce fire hazards, and protect agricultural interests. The website is at http://www.mojavewma.org/, and has information on the common problem weeds in the area.
- The California Native Plant Society maintains information including a database on California vegetation including rare, threatened, and endangered plants (http://www.cnps.org/).
- BLM also maintains a website with useful information on noxious weeds, including management strategies for weeds in California (http://www.blm.gov/weeds/).
- The Center for Invasive Plant Management maintains a website with useful information and resources, including plant profiles, and can be accessed at http://www.weedcenter.org/.
- *Weeds of California and other Western States* by Joseph M. DiTomaso and Evelyn A. Healy, 2006, University of California Department of Agriculture and Natural Resources, is a valuable resource and available at many online book suppliers.

5.2 SURVEYS AND MONITORING

5.2.1 Monitoring Methods

Surveys and monitoring will ensure timely detection and prompt eradication of weed infestations, which are essential to a long-term strategy for weed management.

Construction Areas

The environmental compliance advisor will oversee biological monitors who will be present during site clearing and construction activities. Biological monitors will be responsible for inspecting construction areas, identifying the presence of weeds, and inspecting equipment cleaning facilities for weed seed removal. The environmental compliance advisor will be responsible for prescribing management activities consistent with this plan when weeds become established. Monitoring of construction areas and access routes will be conducted as necessary to insure proper weed control.

General Operations Monitoring

General site monitoring of the operating facility will be conducted by operations personnel on an ongoing basis. Weed control will be conducted, as needed, by operations personnel trained to identify weedy and native species.

Known Infestation Areas

Where weed infestation occurs, and treatment is implemented, the area will be targeted for ongoing monitoring to ensure that treatments are effective and that complete eradication has been achieved. Visits to known infestation areas will continue until weeds in the area are controlled.

5.2.2 Database and Mapping

Locations of weed occurrences, with data on species, detection date, growth stage, infestation extent, treatments implemented, results of treatment, and current status will be maintained during the construction and operation phases. This will not be a requirement for the previously designated ubiquitous invasives. A geographic information system (GIS) will be used to map and store data. The priority of infestation areas will be established based on species, vulnerability of the site to invasion, growth stage, and effectiveness of treatment. Also included will be areas mapped as vulnerable to weed invasions. Vulnerability will be assessed on the following: (1) availability of weed propagule sources, such as along roadsides, (2) areas disturbed, such as through land clearing and earthwork; or (3) nearby areas with known prior or treated weed infestations or existing infestations that are out of the managed area.

SECTION 6 WEED MANAGEMENT

6.1 SPECIES DESCRIPTIONS AND MANAGEMENT STRATEGY

Descriptions of the more common or troublesome weeds occurring or potentially occurring at the project are provided in this section, along with the basic weed management strategy applicable to each. Table 1 provides a complete list of the weed species of concern in this area, and Table 2 provides additional information on management strategy and control methods for observed and potentially occurring weed species. Management strategies must encompass not only eradication, but also identify the means of eradication and the plant species to be eradicated.

Not all invasive plant species can or should be eradicated. Certain ubiquitous exotic species (*e.g., Bromus madritensis ssp. rubens, Schismus spp., Erodium cicutarium, Avena spp.*) will initially be monitored only because control of these aggressive colonizers is impractical, and it would also likely slow site rehabilitation by slowing the rate of secondary succession and surface stabilization. In addition, these species can play a beneficial role in accelerating surface stabilization and, therefore, reduce soil erosion caused by sheet flow or high winds. Complete eradication of large areas where infestations are already established would likely adversely affect other pioneer species, and is likely to be impractical because the area is likely to be re-invaded from adjacent lands in the absence of physical barriers that isolate the area.

The following list provides brief descriptions of the weed species of particular concern at the project. Additional weed species are listed in Table 1.

- **Wild oats** (*Avena* spp.) Cal-IPC has determined that this plant has a moderate invasiveness rating in California (Cal-IPC 2006). BLM and other agencies recognize that because of the widespread distribution of wild oats, this species is not considered feasible to control; therefore, weed abatement efforts for wild oats will not be required.
- **Sahara mustard** or **African mustard** (*Brassica tournefortii*) was observed on the project site. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). This species will be eradicated whenever encountered.
- **Red brome** (*Bromus madritensis* ssp. *rubens*) was observed on the project site. This species is an introduced Eurasian grass adapted to warmer habitats that can be frequently found at the base of desert shrubs. It is widespread in the Mojave Desert and has been found in the project area. Seeds from this species can disperse readily and across large distances. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). Stands of red brome have played an important role in accelerating wildfires in desert scrub communities (Brooks 1999); a deleterious effect partly because warm-desert plant communities are ill-adapted to fire (Brown and Minich 1986). Because of its widespread distribution, red brome is not considered feasible for general control and weed abatement measures for this species will not be required.
- **Cheat grass** (*Bromus tectorum*) is among the most widely distributed invasive plant species in the western U.S. Closely related to red brome, it is adapted to colder steppe and woodland habitats. It is known to occur in the vicinity, but has not been observed on the project site. Cal-IPC has declared this plant highly invasive (Cal-IPC 2006). Because of its widespread

distribution, cheat grass is not considered feasible for general control and weed abatement measures will not be required.

- **Red-stemmed filaree** or **storksbill** (*Erodium cicutarium),* a widespread annual species common in disturbed habitats, was not observed on the project site. It can form dense, transient populations when conditions are suitable. It has a limited overall rating by Cal-IPC, generally because the ecological impacts of the species are considered minor. Because of its widespread distribution, red-stemmed filaree is not considered feasible for general control and weed abatement measures will not be required onsite.
- **Mediterranean grass** (*Schismus* spp.) was was not observed on the site. Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006). BLM and other agencies recognize that because of the widespread distribution of Mediterranean grass, this species is not considered feasible to control; therefore, weed abatement efforts for Mediterranean grass will not be required.
- **Russian thistle** or **tumbleweed** (*Salsola tragus*) is particularly adapted to recently disturbed habitat, and tends to be restricted to roadway shoulders and to sites where the soil has been recently disturbed. This species was observed at the project site. It was widespread, but with a patchy distribution on the project site. Cal-IPC has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006). New occurrences should be eradicated along newly disturbed sites to the extent feasible. However, since this species is already established on the site complete eradication may be impossible and weed abatement efforts should focus on containment to areas where tumbleweed was already established prior to project commencement.
- **London rocket** (*Sisymbrium irio*) is widespread throughout the warm deserts of North America. This species was not observed at the project site, but is a common invader on disturbed sites. Cal-IPC has declared this plant moderately invasive (Cal-IPC 2006). London rocket will be eradicated at the project site wherever it is observed.

New Weeds

Weeds not identified in the descriptions above could also potentially colonize or invade the site, both during construction as well during operation. During construction, the environmental compliance advisor will be required to regularly update the list of potential weeds, and identify new potential threats. This will include developing a management strategy and management methods appropriate to the plant species and nature of the potential invasion. Similarly, the facility plant manager or appropriate designee during operations will be required to continually update the potential weed list and provide monitoring and management appropriate to new species.

6.2 PREVENTATIVE MEASURES

The prevention of invasive plants from colonizing new areas is far more cost-effective than eradication and control (Davies and Sheley, 2007). Therefore, preventative measures taken to the curb the spread of weed propagules and inhibit their germination should include the all measures listed in Appendix A, Table B-1, “Preventative Measures” or the BLM Field Office’s best management practices for weed control.

6.2.1 Construction

Worker Environmental Training

Mandatory site environmental training for contractors or related personnel entering the site during construction will include weed management awareness training. Personnel affected will include contractors, subcontractors, inspection personnel, construction managers, construction personnel, and individuals bringing vehicles or equipment onto the site. Training will include weed identification and training on the impacts of weeds on agriculture, livestock, wildlife, and fire hazard. Impacts of weeds on native vegetation, wildlife, and fire activity will be discussed including an explanation of how invasive grasses provide a fine fuel understory which can spread fire from shrub to shrub and how this has historically been absent in the native desert ecosystem. Proposed measures to prevent the spread of weeds in areas currently not infested, and controls on their proliferation when already present, will also be explained.

Wash Stations

With the underlying principal of prevention being the most cost-effective way to deal with invasive plant species early, wash stations will be set up to remove mud and dirt from construction vehicles. This will prevent the spread of weed seeds into new habitats as trucks with mud and dirt containing seeds is one of the most common ways weed seeds are spread to new environments. Vehicles entering from offsite locations will be required to stop for cleaning. Heavy equipment entering the site on trailers will also require cleaning. The contractor will ensure that vehicles and equipment are free of soil and debris capable of transporting weed seeds, roots, or rhizomes before the vehicles and equipment are allowed to use access roads. Vehicles will be reasonably dry before leaving the wash station. Some weeds, such as Sahara mustard, require water for germination and therefore, vehicles leaving the station wet could promote recruitment of Sahara mustard along access roads.

Wash stations will be located to avoid sensitive biological resources, and will be constructed with either a concrete wash pad or a gravel pad. Silt fencing, weed-free certified hay bales, or other means of trapping wash water sediment and seeds will be installed around the perimeter of wash stations.

Using high-pressure water equipment, vehicles will be washed before entering the construction site. The wash down will concentrate on tracks, feet, or tires and on the undercarriage, with special emphasis on axles, frame, cross members, motor mounts, and on and underneath steps, running boards, and front bumper/brush guard assemblies. Vehicles or heavy equipment will be required to remove caked on mud and debris before entering site. Vehicle cabs will be swept out and refuse will be disposed of in waste receptacles. Sediment accumulated from the washing will be shoveled out daily and placed in a sealed container for disposal in an approved landfill. If removal requirements exceed the capability of the wash stations, equipment will be washed elsewhere before being allowed on the site.

Project workers will also inspect, remove, and dispose of weed seed and plant parts found on their clothing and personal equipment. These items will be bagged and disposed of in a dumpster for deposit in an approved landfill.

When vehicles and equipment are washed, a log will be kept stating the location, date and time, serial number and type of equipment, and methods used. The crewmember that washed the vehicle will sign the log. Written logs will be included in the monitoring reports.

Infestation Containment and Control

During construction, areas of concern will be identified and flagged in the field by biological monitors. The flagging will alert construction personnel that weeds are present and will prevent access into these areas until weed management control measures have been implemented. Contractors will avoid or minimize travel through these marked off weed-infested areas. Control measures will be implemented immediately as described in the sections below. The contractor will begin project operations in weed-free areas whenever feasible before operating in weed-infested areas, until the ECM has verified completion of weed treatments within weed-infested areas.

Site Soil Management

The contractor will limit the size of ground disturbance to the absolute minimum necessary to perform the activity safely and as designed. The contractor will also avoid creating soil conditions that promote weed germination and establishment to the greatest extent practicable. Soil conditions that promote weed germination and establishment include soil excavation/disturbance, vegetation removal, soil compaction, loss or removal of topsoil and introduction of chemical compounds, including fertilizer, and soil stockpiling.

During grading or excavation activities, the contractor will minimize transporting soil within the site to limit the potential spread of weed seeds onsite. In areas where weed infestations are identified, the contractor will stockpile cleared vegetation and salvaged topsoil adjacent to the area from which they are stripped to eliminate the transport of soil-borne weed seeds, roots, or rhizomes.

Weed-free Products

Straw or hay bales used for sediment barrier installations, gravel mulch, and soil may carry weed seeds. The contractor will ensure that straw or hay bales used for sediment barrier installations are obtained from certified sources that are free of weed seeds. Additional products such as gravel, mulch, and soil, may also carry weed seeds. Such products should be obtained from suppliers who can provide weed-free certified materials. To the greatest extent feasible, mulch will be generated from native vegetation cleared from the site itself. At no time will soil be imported onto the site.

Weed-free Seed

Seed purchased from commercial vendors for site revegetation will be labeled in compliance with the relevant provisions of the California Agriculture Code. In addition to having the correct label, the seed should be required to be free of weeds and the label should so state.

Site Reclamation

Currently there are no plans for site closure and reclamation. Should the Lucerne Solar project site ever be closed, a reclamation and revegetation plan with the goal of reducing the extent of weeds that persist on the site following closure would be drafted and submitted to the BLM for review and approval.

6.2.2 Operations

Facility Staff Training

Mandatory site training for maintenance personnel will include weed management. Training will include weed identification and the impacts on agriculture, livestock, wildlife, and fire frequencies. Also explained will be the importance of preventing the spread of weeds in areas currently not infested, and controlling the proliferation of weeds already present.

Infestation Containment and Control

Areas of concern which contain concentrations or new occurrences of weeds will be identified and flagged by groundskeepers. The flagging will alert personnel of weed are presence and will prevent access into these areas until weed management control measures have been implemented. Immediate control measures will be implemented as described below.

6.2.3 Site Closure

Site decommissioning and closure should include drafting and implementation of a site revegetation and rehabilitation Plan. This plan will include measures to avoid weed establishment throughout the site, and to implement long-term site rehabilitation and revegetation of decommissioned facilities. Control of weed establishment should be a central goal of long-term site rehabilitation, the long-term success of which will be enhanced by revegetation measures promoting surface stability and soil development.

6.3 ERADICATION AND CONTROL METHODS

6.3.1 Unacceptable Weed Removal Methods

Tilling

Tilling is a weed-control practice used on agricultural lands that is inappropriate in this area for weed control purposes. Tilling is ineffective in desert landscapes and tilled weeds are likely to set seed, even after burial. In addition, tilling is likely to disturb native cover stock, and will also disrupt the natural structure and chemistry of the soil, allowing weed seeds to proliferate from soil disturbance. Fragmenting weeds resulting from tilling will also lead to more widespread growth of non-native plants.

Mowing

Mowing is sometimes used to reduce weed cover late in the growing season, typically after annuals have matured. This method merely cuts back the thatch that develops during the growing season and does not remove weeds. It is sometimes used as a fire control method, but will result in an aggravation of weed infestation problems rather than the removal/control of weeds. Mowing is problematic for the following reasons: (1) Mowing would severely damage existing native plants, including small individuals that may or may not be visible at the time of mowing, but could be pushing their way through the canopy as they mature; (2) Mowing, which is typically done late in the spring or early summer, would result in maturation of weed seed from existing weeds after they are cut and left to desiccate, increasing weed seed in the seed bank and ensuring a robust crop of weeds in subsequent years; and (3) Native ground and shrub nesting birds could potentially use the site as a breeding ground between February and August. The federal Migratory Bird Treaty Act (16 U.S.C. 703-712; 50 Code of Federal Regulations 10) prohibits the "take" of migratory birds, and protects eggs, nests, and feathers, unless permitted. Take is defined in part as "pursue, hunt, take, capture, kill, or attempt to take, capture, or kill any migratory bird, any part, nest, or eggs of any such bird." Hence, mowing activity during the breeding season would potentially violate this federal law.

6.3.2 Physical Removal of Weeds

The type of physical control method employed will depend upon the size and extent of weed species targeted for removal as well as the root structures of these plants. Physical control methods range from manual hand pulling of weeds to the use of hand tools to provide enough leverage to pull out the entire plant and associated root systems. Hand or power tools can also be employed to uproot, girdle, or cut plants. The Root Talon and Weed Wrench are handheld tools designed to grip the plant stems and provide enough leverage to remove roots, they may be used to pull out woody shrubs such as tamarisk or Russian olive. This effort should be focused on weed species that have a single-root mass, facilitating easy removal. Hand removal by pulling is appropriate when the plants are large enough that they will not break and leave the roots structures behind to re-sprout. For localized weed control, this is the most effective method. Hand-pulling is less effective in large areas and with weed species that spread through an underground root system (*e.g.*, Bermuda grass).

In small areas, hoeing and weed whipping can be employed to control weeds. However, care must be employed when using these methods adjacent to native plants to prevent damage to native plants. Hoeing or weed whipping must only be employed prior to a plant setting seed, otherwise this disturbance would only serve to further disperse and promote the establishment of the weed species. Pertinent considerations for hoeing and weed whipping include the following:

- Hoeing works best on patches of small weeds and with weeds that have a single-root mass. It is less effective on larger weeds that can regenerate from cut roots. It should not be used on weeds approaching maturity, as seeds can mature and be released on cut plants. Hoed plant material should be bagged and removed offsite.
- Weed whipping can be used for weed removal in limited upland areas with herbaceous plant covers; however, it should not be used on weeds approaching maturity, as seeds can mature and be released on cut plants, and care must be employed when weed whipping adjacent to native plants. Cut plant material should be bagged and removed offsite.

6.3.3 Chemical Methods for Weed Removal

Herbicide application is a widely employed, effective control method for removing invasive weed species. One consideration is the possible inadvertent application of herbicide to adjacent native plants. Herbicide application can become a challenge when weeds are interspersed with native cover.

Permitting and Regulatory Requirements

Prior to application of herbicide, contractors will be required to obtain required permits from state and local authorities. Permits may contain additional terms and conditions that go beyond the scope of this plan. Only a State of California and federally certified contractor, who is also approved by BLM, will be permitted to perform herbicide applications. Herbicides will be applied in accordance with applicable laws, regulations, and permit stipulations. Only herbicides and adjuvants approved by the State of California and federal agency for use on public lands will be used within or adjacent to the project site. A list of approved herbicides and adjuvants is available in Appendix B.

The *Final Programmatic EIS on Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* lists 18 herbicides acceptable for use on BLM lands (USDI 2007). Guidelines for the use of chemical control of vegetation on BLM lands are presented in the *Chemical Pest Control Manual* (BLM, n.d.). These guidelines require submittal of a pesticide use proposal (PUP) and pesticide application records (PAR) for the use of herbicides on BLM lands. Only herbicides and adjuvents approved by BLM and California Department of Pesticide Regulation for use on public land shall be used. A sample form required for the submittal of a PUP is included in Appendix C.

Lucerne Solar will submit PARs for each use of herbicides on BLM lands within 24 hours of application to the BLM Barstow Field Office. The BLM, in turn, will provide the San Bernardino County DPR with pesticide use reports. A sample form required for submittal of PARs is included in Appendix D. The occurrence of weeds within the project footprint, or where the weeds occur, will be reported to the BLM Barstow field office. The appropriate weed control procedures, including target species, timing of control, and method of control, will be determined in consultation with BLM personnel. Lucerne Solar will be responsible for providing the necessary trained personnel or hiring a contractor to implement the required weed control procedures.

Types of Herbicides

Herbicides are characterized by the way in which they inhibit plant growth. Herbicides are characterized as pre-emergent, post-emergent, selective and nonselective. A pre-emergent herbicide controls ungerminated seeds by inhibiting germination while a post-emergent herbicide is lethal to emerged plants. Some herbicides have both pre- and post-emergent activity. A selective herbicide will be active on some species of plants and not others, usually distinguishing between grasses (monocots) and broadleaf plants (dicots). A non-selective herbicide is one that is lethal to any plant species to which it is applied.

Herbicides kill plants through either contact or systemic action. Contact herbicides are most effective against annual weeds and kill only the plant parts on which the chemical is deposited. Systemic herbicides are absorbed either by roots or foliar parts of a plant and are then translocated within the plant system to tissues that might be remote from the point of application. Although systemic herbicides can be effective against annual and perennial weeds, they are particularly effective against established perennial weeds.

Pre-emergent herbicides inhibit germination of annuals from seed, but generally do not control perennial plants that germinate from bulbs, corms, rhizomes, stolens, or other vegetative structures. Common pre-emergent herbicide classes include the following:

- Dinitroaniline Type: Examples of this class are pendimethalin (Weedgrass™), trifluralin (Treflan™), benefin (Balan™), and combinations of these. These herbicides provide for pre-emergence control of annual grasses and other annuals. They are mitotic (cell division) inhibitors and are primarily effective in inhibiting root growth of germinating seeds. Selectivity is physiological or chemical in nature. Some of these herbicides could be lost by volatilization, and should not be applied in temperatures above 90 degrees Fahrenheit (°F). These herbicides need to be watered into the soil for proper activation. Some can persist for several months.
- Dithiopyr (Dimension™) belongs to a new class of herbicide known as pyridines. It is a selective herbicide primarily used for pre-emergence annual grass control in established turfgrass. However, it can be used for post-emergence control of young grass seedlings. It inhibits cell division and cell growth of meristematic regions (growing points of roots and shoots). Dithiopyr is lost from soil by chemical and microbial degradation.

The most commonly used post-emergent, non-selective herbicides contain a family of chemicals called glyphosates (N-[phosphonomethyl] glycine). Glyphosate is a non-selective, systemic herbicide that is effective on many annual and perennial plants. It works by blocking an enzyme pathway that is important for plant protein synthesis, which is most effective if full coverage over the plants leaf is accomplished. However, because of systemic action, even partial coverage can result in plant mortality. The herbicide is typically used in conjunction with linseed oil or another surfactant, which aids in spreading an even layer across the surface of the leaves. Because glyphosate can also be lost to volatilization, they should not be applied when the temperature exceeds 90°F.

The United States Environmental Protection Agency (EPA 1993) has deemed glyphosate to have a relatively low degree of oral and dermal acute toxicity. It is considered to be immobile in soil and readily degraded by soil microbes to the metabolite aminomethyl phosphonic acid and then to carbon dioxide. EPA states that it is minimally toxic to birds, fish, aquatic invertebrates, and honeybees (EPA 1993).

Application and Handling

Herbicide application will be based on information gathered from the BLM. Before application of herbicide, Lucerne Solar's Contractors will obtain any required permits from the local authorities. Permits may contain additional terms and conditions that go beyond the scope of this management plan. Only A State and Federally certified contractor, approved by the BLM, will perform herbicide applications. All herbicide application will be applied in accordance with applicable laws and regulations and permit stipulations. Only herbicides and adjuvants approved by California and for use on public lands will be used within or adjacent to the project site. The following general precautions will be implemented for pesticide application:

Limitations

All herbicide applications must follow United States Environmental Protection Agency label instructions. Application of herbicides will be suspended when any of the following conditions exists:

- Wind velocity exceeds 6 miles per hour (mph) during application of liquids or 15 mph during application of granular herbicides.
- Snow or ice covers the foliage of weeds.
- Precipitation is occurring or is imminent.
- Air temperatures exceed 90°F.

Due to concerns by the FWS on potential adverse effects of herbicide applications on the desert tortoise, only herbicides with empirically proven low toxicity to test animals in the PUP process will be used. **This includes post-emergent herbicide formulations with the active ingredient glyphosate, and pre-emergent herbicide formulations with the active ingredients bromacil and/or diuron.**

Transport and Mixing

During the construction phase, herbicides will be transported to the project site daily with the following provisions:

- Only the needed quantity for that day's work will be transported.
- Concentrate will be transported in approved containers only and in a manner that will prevent tipping or spilling, and in a location that is isolated from the vehicle's driving compartment, food, clothing, and safety equipment.
- Mixing will be done offsite, over a drip-catching device, and at a distance greater than 200 feet from open or flowing water, wetlands, or other sensitive resources. No herbicides will be applied at these areas unless authorized by appropriate regulatory agencies.
- Herbicide equipment and containers will be inspected for leaks daily. Disposal of spent containers will be in accordance with the herbicide label.
- During the operations phase of the project, herbicides will be stored only in cabinets of approved design and will be under lock and key.

Worker Safety

The use of small quantities of chemical herbicides will be required at the project site. Site workers have the potential to come into contact with herbicides during application and during inverter servicing and solar array inspections in areas where herbicides have been used to control weeds.

The following Best Management Practices (BMP) will be followed to ensure worker safety at the project site:

- The project site will follow all appropriate California Department of Pesticide Regulation (DPR) requirements regarding the use of herbicides.
- Pesticide safety training for all workers including training on how to use application equipment and specific safety precautions for each herbicide being applied.
- Personal protective equipment will be supplied for every worker.
- Decontamination supplies will be available to all workers who face exposure to herbicides including showers, soap, towels and a change of clothing.
- Emergency information posted including the location of the nearest medical facility and instructions on what to do in the event of an emergency.
- Emergency transportation in the event of accidental exposure.
- Project site communication during and following herbicide application so that herbicides do not contact anyone through drift.
- Required application equipment checks.
- Observance of the recommended time before entering an area where herbicides have been applied so that trucks and workers inspecting solar arrays and inverters are not exposed to herbicides.

Herbicide Spills and Cleanup

Reasonable precautions will be taken to avoid herbicide spills. In the event of a spill, immediate cleanup will be initiated. Contractors will keep spill kits in their vehicles and in herbicide storage areas to allow for quick and effective response to spills.

The following items are to be included in the spill kit:

- protective clothing and gloves,
- absorptive clay, "kitty litter," or other commercial adsorbent,
- plastic bags and bucket,
- shovel,
- fiber brush and screw-in handle,
- dust pan,
- caution tape,
- highway flares (use on established roads only), and
- detergent.

Response to herbicide spills will vary with the size and location of the spill, but general procedures include the following:

- BLM notification,

- traffic control,
- dressing the cleanup team in protective clothing,
- stopping the leaks,
- containing the spilled material,
- cleaning up and removing the spilled herbicide or contaminated adsorptive material and soil, and
- transporting the spilled pesticide and contaminated material to an authorized disposal site.

Spray Methods

Vehicle-mounted sprayers (*e.g.*, handgun, boom, and injector) will be used mainly in open areas that are readily accessible by vehicle. Hand application methods (*e.g.*, backpack spraying) that target individual plants will be used to treat small or scattered weed populations in rough terrain. Calibration checks of equipment will be conducted at the beginning of spraying and periodically throughout treatment to ensure that proper application rates are achieved.

Controlling Post-emergent Herbaceous and Woody Vegetation

Suggested managing strategies and control methods for observed and potentially occurring weeds at the Lucerne Solar project site are provided in Table 2.

Controlling Pre-emergent Vegetation

The use of a pre-emergent herbicide can be a very valuable control method. All the weed species identified except salt cedar are annual plants. Most annuals propagate by seed and management of the seedbank is important in weed management involving annuals.

The PV solar array fields be managed for bare ground: the portion of the project identified for the array fields need to be cleared of vegetation before covering the bare ground with a soil binder, erecting the frames for the arrays of panels, and applying a pre-emergent herbicide prior to germination (winter). The latter will be re-applied every winter to control germination of annual weed species. This would effectively control annual weed populations over the vast majority of the project area.

All herbicide application should end by mid-May and not resume until the following December with a pre-emergent.

6.3.4 Competitive Vegetation

The use of native plants to out-compete invasive weed species is an effective, long-term weed control strategy incorporated for this project site. Following BMP measures laid out for Lucerne Solar, a seed mix of native plant species will be distributed within temporary disturbance areas and in other disturbed areas following completion of the project. Establishment of these species has the potential to exclude weed invasion, and over time, weed control will require less effort.

SECTION 7 REPORTING REQUIREMENTS

7.1 REPORT CONTENT

Implementation of the noxious weed management plan will include the following data collection and reporting guidelines.

7.1.1 Construction Reports

During the project construction phases, ongoing reporting on weed management will be included in construction weed monitoring reports. Construction weed monitoring reports will include the following information:

- Survey findings on location, type, extent, and density of weeds. These data will include mapping and photographs, as appropriate, as well as textual and tabular data content to fully describe conditions on the project site.
- Management efforts, including date, location, type of treatment implemented, and results. Ongoing evaluation of success of treatment will be included.
- Information on implementation and success of preventative measures, including status of equipment wash facilities and summary data of use; data on the worker environmental training program, including participants.
- Summary description of revegetation efforts undertaken, and their current status.

7.2 REPORTING PERIODS

All reporting concerning weed management and re-vegetation shall be submitted to the BLM Barstow Field Office.

7.2.1 Construction Period

It is anticipated that monthly records will be kept by the environmental compliance advisor and the monitoring team.

A single post-construction report will be produced after each phase of construction is completed at Lucerne Solar, with a section summarizing the overall results of weed management, and weed status at the site. Pesticide application records (PAR) will be provided to the BLM Barstow field office on a monthly basis.

SECTION 8 REFERENCES

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Tables

Table 1
Observed and Potentially Occurring Invasive/Noxious Weeds at Lucerne Solar Project Site

Scientific Name	Common Name	Habitats of Concern and Comments	Observed During Surveys and Anticipated Distribution in Project Area	CDFA Rank	Noxious Weed (Yes or No)
Ailanthus altissima	tree of heaven	Riparian areas, grasslands, oak woodland. Impacts highest in riparian areas.	Not observed.	C	Yes
Alhagi camelorum	camel thorn	Grassland, meadows, riparian and desert scrub, Sonoran thorn woodland. Very invasive in southwestern states. Limited distribution in California.	Not observed.	A	Yes
Avena barbata; A. fatua	slender wild oats; wild oats	Coastal scrub, grasslands, oak woodland, forest. Very widespread, but impacts more severe in desert regions.	Not observed.	Not Listed	No
Brassica tournefortii	Sahara mustard	Desert dunes, desert and coastal scrub.	Observed; but with a patchy distribution.	Not Listed	No
Bromus diandrus	ripgut brome	Dunes, scrub, grassland, woodland, forest. Very widespread, but monotypic stands uncommon.	Not observed.	Not Listed	No
Bromus madritensis ssp. *madritensis*	compact brome	Scrub, grassland, desert washes, woodlands.	Observed throughout the project area.	Not Listed	No

Table 1
Observed and Potentially Occurring Invasive/Noxious Weeds at Lucerne Solar (Continued)

Scientific Name	Common Name	Habitats of Concern and Comments	Observed During Surveys and Anticipated Distribution in Project Area	CDFA Rank	Noxious Weed (Yes or No)
Bromus madritensis ssp. *rubens*	red brome	Scrub, grassland, desert washes, woodlands.	Not observed.	Not Listed	No
Bromus tectorum	downy brome, cheatgrass	Interior scrub, woodlands, grasslands, pinon/Joshua tree woodland, chaparral.	Observed throughout the project area.	Not Listed	No
Cynodon dactylon	Bermuda grass	Riparian scrub in southern California. Common landscape weed, but can be very invasive in desert washes.	Not observed.	C	No
Descurainia sophia	flixweed, tansy mustard	Scrub, grassland, woodland. Impacts appear to be minor, but locally more invasive in northeast California.	Not observed.	Not Listed	No
Elaeagnus angustifolia	Russian olive	Interior riparian. Impacts more severe in other western states. Current distribution limited in California.	Not observed.	Not Listed	No
Erodium cicutarium	red-stemmed filaree	Many habitats. Widespread. Impacts minor in wildlands. High-density populations transient.	Observed throughout the project area.	Not Listed	No

Table 1
Observed and Potentially Occurring Invasive/Noxious Weeds at Lucerne Solar (Continued)

Scientific Name	Common Name	Habitats of Concern and Comments	Observed During Surveys and Anticipated Distribution in Project Area	CDFA Rank	Noxious Weed (Yes or No)
Halogeton glomeratus	halogeton	Scrub, grasslands, pinyon-juniper woodland. Larger problem in Nevada. Monotypic stands are rare.	Not observed.	A	Yes
Lactuca serriola	prickly lettuce	Primarily an agricultural and roadside weed.	Not observed.	Not Listed	No
Malva parviflora	cheeseweed	Common in disturbed places throughout California. More widespread in desert regions.	Not observed.	Not Listed	No
Mesembryanthemum crystallinum	crystalline iceplant	Coastal bluffs, dunes, scrubs, grasslands. Limited distribution. Locally problematic, especially in southern California.	Not observed.	Not Listed	No
Phalaris minor	Mediterranean canary grass	Common in disturbed areas especially near washes. Widespread in low elevation California deserts.	Not observed.	Not Listed	No

Table 1
Observed and Potentially Occurring Invasive/Noxious Weeds at Lucerne Solar
(Continued)

Scientific Name	Common Name	Habitats of Concern and Comments	Observed During Surveys and Anticipated Distribution in Project Area	CDFA Rank	Noxious Weed (Yes or No)
Salsola paulsenii	barbed-wire Russian thistle	Desert and Great Basin scrub. Limited distribution. Impacts in desert appear to be minor.	Not observed; widespread but typically uncommon except in recently disturbed habitats.	C	Yes
Salsola tragus; S. kali; S. pestifer	Russian thistle; tumble weed	Desert dunes and scrub, alkali playa. Widespread. Impacts minor in wildlands.	Observed; but with a patchy distribution.	C	No
Schismus arabicus, Schismus barbatus	Mediterranean-grass	Scrub, thorn woodland. Widespread in deserts. Impacts can be more important locally.	Observed throughout the project area.	Not Listed	No
Sisymbrium irio	London rocket	Scrub, grasslands. Widespread. Primarily in disturbed sites. Impacts vary locally.	Observed throughout the project area; but with a patchy distribution.	Not Listed	No
Solanum elaeagnifolium	white horsenettle	Primarily agricultural weed, but escaping to wild lands in other countries. May be expanding range.	Not observed.	B	Yes

Table 1
Observed and Potentially Occurring Invasive/Noxious Weeds at Lucerne Solar (Continued)

Scientific Name	Common Name	Habitats of Concern and Comments	Observed During Surveys and Anticipated Distribution in Project Area	CDFA Rank	Noxious Weed (Yes or No)
Sonchus oleraceus	common sow thistle	Primarily an agricultural weed.	Not observed.	Not Listed	No
Tribulus terrestris	puncture vine	Many habitats. Common in disturbed areas. A pernicious weed, can be controlled by introduced weevils.	Not observed.	C	Yes

Table 2
Managing Strategies and Control Methods for Observed and Potentially Occurring Weeds at the Lucerne Solar Project Site

Scientific Name	Common Name	Management Strategy	Control Method
Ailanthus altissima	tree of heaven	Monitor for occurrence, and eradicate if found.	***Mature Trees:*** Cut trees and apply 100 percent herbicide to cut stem; spray new shoots - See Section 6.3.3, Chemical Methods for Weed Removal
			Saplings: Pull out entire plant and root - See Section 6.3.2, Physical Removal of Weeds
Alhagi camelorum	camel thorn	Monitor for occurrence, and eradicate if found.	***Individual Plants:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
Avena barbata; Avena fatua	Slender wild oaks; wild oats	No Action; allow colonization as pioneer species in revegetation areas.	N/A
Brassica tournefortii	Sahara mustard	Monitor for occurrence in December-January prior to seed set, and eradicate if found; continue to monitor occurrence sites to ensure complete eradication.	***Individual Plants:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
Bromus diandrus	Ripgut Brome	Monitor for occurrence and eradicate if found.	***Stands:*** Spray with post-emergent, systemic, selective (monocot) herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Bromus madritensis ssp. *rubens*	red brome	No Action; allow colonization as pioneer species in revegetation areas.	N/A
Bromus tectorum	downy brome, cheatgrass	No Action; allow colonization as pioneer species in revegetation areas.	N/A

Table 2
Managing Strategies and Control Methods for Observed and Potentially Occurring Noxious Weeds at Lucerne Solar Project Site (Continued)

Scientific Name	Common Name	Management Strategy	Control Method
Cynodon dactylon	Bermuda grass	Monitor for and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Stands: Spray with post-emergent, systemic, selective (monocot) herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Descurainia sophia	flixweed, tansy mustard	Monitor for occurrence, and eradicate if found.	***Individual Plants:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
Elaea gnus angustifolia	Russian olive	Monitor for occurrence and eradicate if found.	***Mature Trees/Shrubs:*** Cut trees and apply 100 percent herbicide to cut stem; spray new shoots - See Section 6.3.3, Chemical Methods for Weed Removal
			Saplings: Pull out entire plant and root - See Section 6.3.2, Physical Removal of Weeds
Erodium cicutarium	red-stemmed filaree	No Action; allow colonization as pioneer species in revegetation areas.	***N/A***
Halogeton glomeratus	halogeton	Monitor for occurrence, and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Lactuca serriola	Prickly lettuce	Monitor for occurrence, and eradicate if found.	***Individual Plants:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling

Table 2

Managing Strategies and Control Methods for Observed and Potentially Occurring Noxious Weeds at Lucerne Solar Project Site (Continued)

Scientific Name	Common Name	Management Strategy	Control Method
Malva parviflora	cheeseweed	Monitor for occurrence and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Mesembryanthemum crystallinum	Crystalline iceplant	Monitor for occurrence, and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Phalaris minor	Mediterranean canary grass	Monitor for occurrence and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Salsola paulsenii	barbed-wire Russian thistle	Monitor for occurrence, and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal

Table 2

Managing Strategies and Control Methods for Observed and Potentially Occurring Noxious Weeds at Lucerne Solar Project Site (Continued)

Scientific Name	Common Name	Management Strategy	Control Method
Salsola tragus; S. kali; S. pestifer	Russian thistle; tumble weed	Monitor for occurrence and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Schismus arabicus, Schismus barbatus	Mediterranean-grass	No Action; allow colonization as pioneer species in revegetation areas.	*N/A*
Sisymbrium irio	London rocket	Monitor for occurrence and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Solanum elaeagnifolium	white horsenettle	Monitor for occurrence and eradicate if found.	***Select Occurrences:*** Pull out entire plant and root and bag for disposal - see Section 6.3.2, Physical Removal of Weeds; Hand Pulling
			Monotypic Stands: Spray with post-emergent herbicide; after senescence, remove with flail mower and bag for disposal - See Section 6.3.3, Chemical Methods for Weed Removal
Tamarix ramosissima; Taxarix sp.	saltcedar	Monitor for occurrence and eradicate if found.	***Mature Trees:*** Cut trees and apply 100 percent herbicide to cut stem; spray new shoots - See Section 6.3.3, Chemical Methods for Weed Removal
			Saplings: Pull out entire plant and root - See Section 6.3.2, Physical Removal of Weeds

Figure 1: Lucerne Solar Vicinity Map

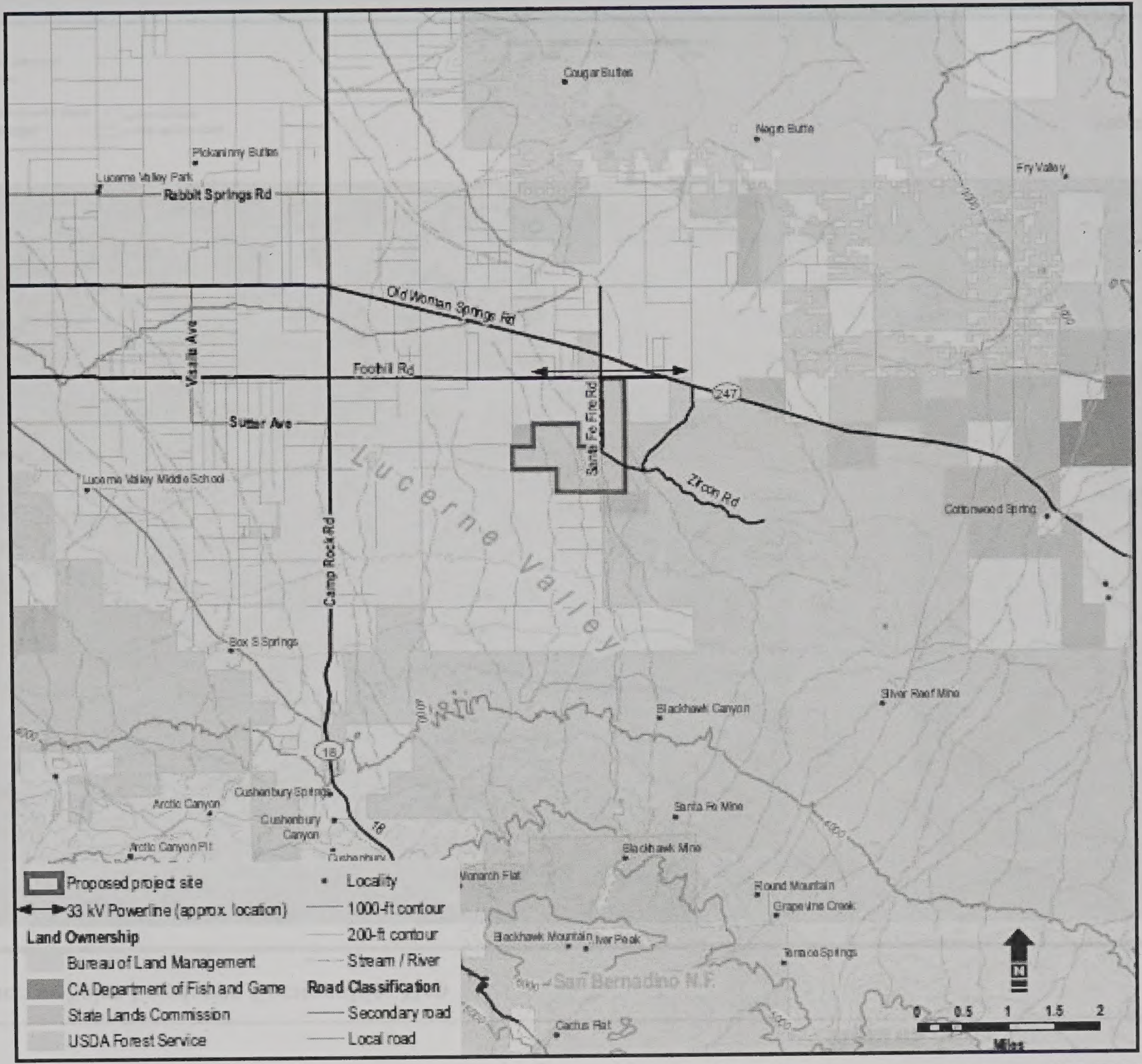
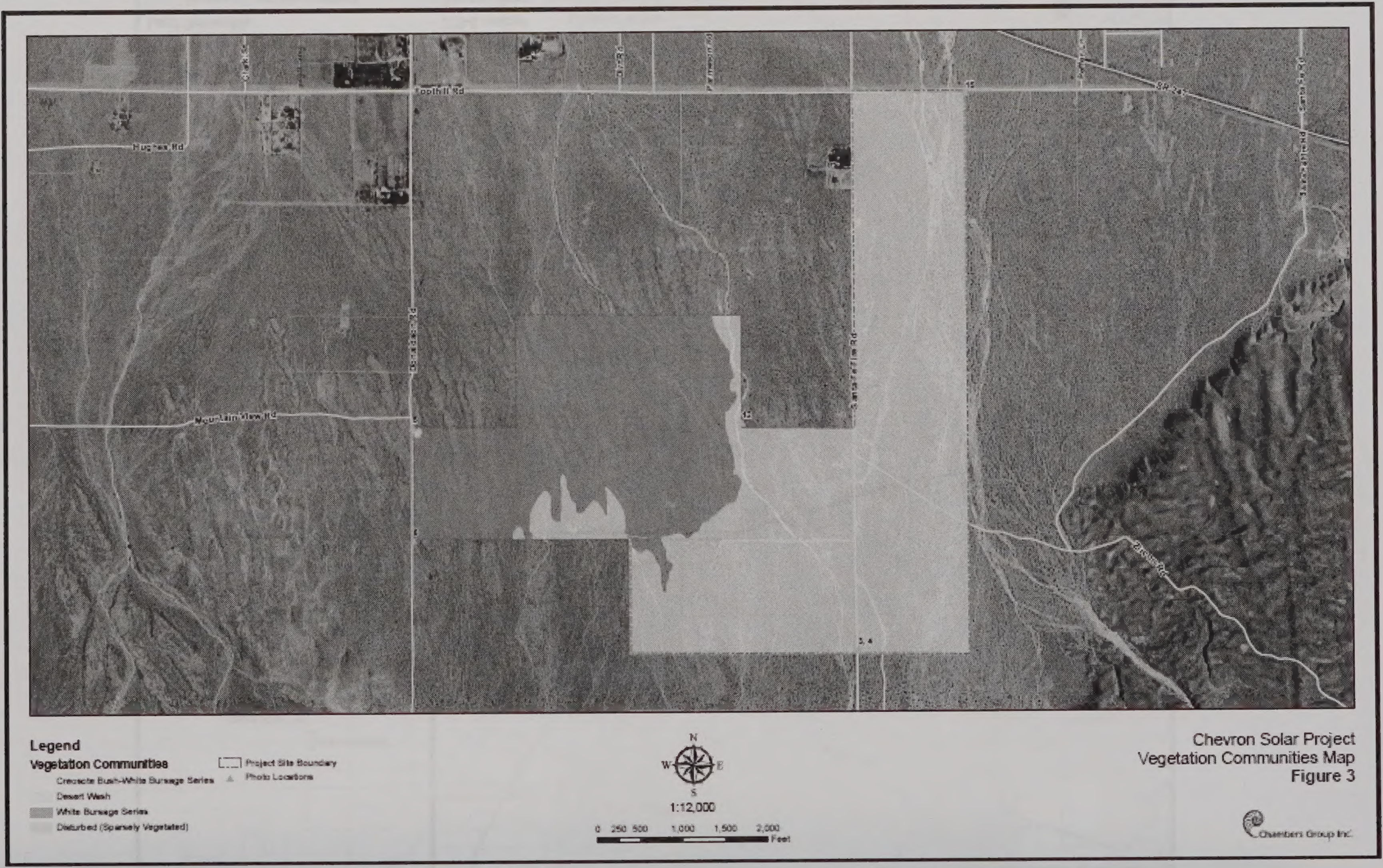


Figure 2: Lucerne Solar Vegetation Communities Map



APPENDIX A HERBICIDE TREATMENT STANDARD OPERATING PROCEDURES

APPENDIX B

HERBICIDE TREATMENT STANDARD OPERATING PROCEDURES

This section identifies standard operating procedures (SOPs) that will be followed by the U.S. Department of the Interior Bureau of Land Management (USDI BLM) under all alternatives to ensure that risks to human health and the environment from herbicide treatment actions will be kept to a minimum. Standard operating procedures are the management controls and performance standards required for vegetation management treatments. These practices are intended to protect and enhance natural resources that could be affected by future vegetation treatments.

Prevention of Weeds and Early Detection and Rapid Response

Once weed populations become established, infestations can increase and expand in size. Weeds colonize highly disturbed ground and invade plant communities that have been degraded, but are also capable of invading intact communities. Therefore, prevention, early detection, and rapid response are the most cost-effective methods of weed control. Prevention, early detection, and rapid response strategies that reduce the need for vegetative treatments for noxious weeds should lead to a reduction in the number of acres treated using herbicides in the future by reducing or preventing weed establishment.

As stated in the BLM's *Partners Against Weeds: An Action Plan for the BLM,* prevention and public education are the highest priority weed management activities. Priorities are as follows:

- Priority 1: Take actions to prevent or minimize the need for vegetation control when and where feasible, considering the management objectives of the site.
- Priority 2: Use effective nonchemical methods of vegetation control when and where feasible.
- Priority 3: Use herbicides after considering the effectiveness of all potential methods or in combination with other methods or controls.

Prevention is best accomplished by ensuring the seeds and vegetatively reproductive plant parts of new weed species are not introduced into new areas.

The BLM is required to develop a noxious weed risk assessment when it is determined that an action may introduce or spread noxious weeds or when known habitat exists. If the risk is moderate or high, the BLM may modify the project to reduce the likelihood of weeds infesting the site, and to identify control measures to be implemented if weeds do infest the site.

To prevent the spread of weeds, the BLM takes actions to minimize the amount of existing non-target vegetation that is disturbed or destroyed during project or vegetation treatment actions (Table B-1). During project planning, the following steps are taken:

- Incorporate measures to prevent introduction or spread of weeds into project layout, design, alternative evaluation, and project decisions.
- During environmental analysis for projects and maintenance programs, assess weed risks, analyze potential treatment of high-risk sites for weed establishment and spread, and identify prevention practices.
- Determine prevention and maintenance needs, to include the use of herbicides if needed, at the onset of project planning.
- Avoid or remove sources of weed seed and propagules to prevent new weed infestations and the spread of existing weeds.

During project development, weed infestations are prioritized for treatment in project operating areas and along access routes. Weeds present on or near the site are identified, a risk assessment is completed, and weeds are controlled as necessary. Project staging areas are weed free, and travel through weed infested areas is avoided or minimized. Examples of prevention actions to be followed during project activities include cleaning all equipment and clothing before entering the project site; avoiding soil disturbance and the creation of other soil conditions that promote weed germination and establishment; and using weed-free seed, hay, mulch, gravel, soil, and mineral materials on public lands where there is a state or county program in place.

Conditions that enhance invasive species abundance should be addressed when developing mitigation and prevention plans for activities on public lands. These conditions include excessive disturbance associated with road maintenance, poor grazing management, and high levels of recreational use. If livestock grazing is managed to maintain the vigor of native perennial plants, particularly grasses, the chance of weeds invading rangeland is much less. By carefully managing recreational use and educating the public on the potential impacts of recreational activities on vegetation, the amount of damage to native vegetation and soil can be minimized at high use areas, such as campgrounds and off-highway vehicle (OHV) trails. Early detection in recreation areas is focused on roads and trails, where much of the weed spread occurs.

The BLM participates in the National Early Warning and Rapid Response System for Invasive Plants (Figure B-1). The goal of this System to minimize the establishment and spread of new invasive species through a coordinated framework of public and private processes by:

- Early detection and reporting of suspected new plant species to appropriate officials;
- Identification and vouchering of submitted specimens by designated specialists;
- Verification of suspected new state, regional, and national plant records;
- Archival of new records in designated regional and plant databases;
- Rapid assessment of confirmed new records; and
- Rapid response to verified new infestations that are determined to be invasive.

Herbicide Treatment Planning

BLM Manual 9011 (*Chemical Pest Control*) outlines the policies, and BLM Handbook H-9011-1 (*Chemical Pest Control*) outlines the procedures, for use of herbicides on public lands. As part of policy, the BLM is required to thoroughly evaluate the need for chemical treatments and their potential for impact on the environment. The BLM is required to use only U.S. Environmental Protection Agency (USEPA)-registered herbicides that have been properly evaluated under National Environmental Policy Act (NEPA), and to carefully follow label directions and additional BLM requirements.

An operational plan is developed and updated for each herbicide project. The plan includes information on project specifications, key personnel responsibilities, and communication, safety, spill response, and emergency procedures. For application of herbicides not approved for aquatic use, the plan should also specify minimum buffer widths between treatment areas and water bodies. Recommended widths are provided in BLM Handbook H-9011-1 (*Chemical Pest Control*), but actual buffers are site and herbicide active ingredient specific, and are determined based on a scientific analysis of environmental factors, such as climate, topography, vegetation, and weather; timing and method of application; and herbicide risks to humans and non-target species. Table B-2 summarizes important SOPs that should be used when applying herbicides to help protect resources of concern on public lands.

Revegetation

Disturbed areas may be reseeded or planted with desirable vegetation when the native plant community cannot recover and occupy the site sufficiently.

Determining the need for revegetation is an integral part of developing a vegetation treatment. The most important component of the process is determining whether active (seeding/planting) or passive (natural recovery) revegetation is appropriate.

U.S. Department of the Interior policy states, "Natural recovery by native plant species is preferable to planting or seeding, either of natives or non-natives. However, planting or seeding should be used only if necessary to prevent unacceptable erosion or resist competition from non-native invasive species" (620 Departmental Memorandum 3 2004). This policy is reiterated in the USDI *Burned Area Emergency Stabilization and Rehabilitation* Manual, the BLM *Burned Area Emergency Stabilization and Rehabilitation* Manual (BLM H-1742-1), and the *Interagency Burned Area Rehabilitation Guidebook.*

TABLE B-1
Prevention Measures

BLM Activity	Prevention Measure
Project Planning	• Incorporate prevention measures into project layout and design, alternative evaluation, and project decisions to prevent the introduction or spread of weeds. • Determine prevention and maintenance needs, including the use of herbicides, at the onset of project planning. • Before ground-disturbing activities begin, inventory weed infestations and prioritize areas for treatment in project operating areas and along access routes. • Remove sources of weed seed and propagules to prevent the spread of existing weeds and new weed infestations. • Pre-treat high-risk sites for weed establishment and spread before implementing projects. • Post weed awareness messages and prevention practices at strategic locations such as trailheads, roads, boat launches, and public land kiosks. • Coordinate project activities with nearby herbicide applications to maximize the cost-effectiveness of weed treatments.
Project Development	• Minimize soil disturbance to the extent practical, consistent with project objectives. • Avoid creating soil conditions that promote weed germination and establishment. • To prevent weed germination and establishment, retain native vegetation in and around project activity areas and keep soil disturbance to a minimum, consistent with project objectives. • Locate and use weed-free project staging areas. Avoid or minimize all types of travel through weed-infested areas, or restrict travel to periods when the spread of seeds or propagules is least likely. • Prevent the introduction and spread of weeds caused by moving weed-infested sand, gravel, borrow, and fill material. • Inspect material sources on site, and ensure that they are weed-free before use and transport. Treat weed-infested sources to eradicate weed seed and plant parts, and strip and stockpile contaminated material before any use of pit material. • Survey the area where material from treated weed-infested sources is used for at least 3 years after project completion to ensure that any weeds transported to the site are promptly detected and controlled. • Prevent weed establishment by not driving through weed-infested areas. • Inspect and document weed establishment at access roads, cleaning sites, and all disturbed areas; control infestations to prevent weed spread within the project area. • Avoid acquiring water for dust abatement where access to the water is through weed-infested sites. • Identify sites where equipment can be cleaned. Clean equipment before entering public lands. • Clean all equipment before leaving the project site if operating in areas infested with weeds. • Inspect and treat weeds that establish at equipment cleaning sites. • Ensure that rental equipment is free of weed seed. • Inspect, remove, and properly dispose of weed seed and plant parts found on workers' clothing and equipment. Proper disposal entails bagging the seeds and plant parts and incinerating them.
Revegetation	• Include weed prevention measures, including project inspection and documentation, in operation and reclamation plans. • Retain bonds until reclamation requirements, including weed treatments, are completed, based on inspection and documentation. • To prevent conditions favoring weed establishment, reestablish vegetation on bare ground caused by project disturbance as soon as possible using either natural recovery or artificial techniques. • Maintain stockpiled, uninfested material in a weed-free condition.

TABLE B-1 (Cont.)
Prevention Measures

BLM Activity	Prevention Measure
Revegetation (Cont.)	• Revegetate disturbed soil (except travel ways on surfaced projects) in a manner that optimizes plant establishment for each specific project site. For each project, define what constitutes disturbed soil and objectives for plant cover revegetation. Revegetation may include topsoil replacement, planting, seeding, fertilization, liming, and weed-free mulching, as necessary. • Where practical, stockpile weed-seed-free topsoil and replace it on disturbed areas (e.g., road embankments or landings). • Inspect seed and straw mulch to be used for site rehabilitation (for wattles, straw bales, dams, etc.) and certify that they are free of weed seed and propagules. • Inspect and document all limited term ground-disturbing operations in noxious weed infested areas for at least 3 growing seasons following completion of the project. • Use native material where appropriate and feasible. Use certified weed-free or weed-seed-free hay or straw where certified materials are required and/or are reasonably available. • Provide briefings that identify operational practices to reduce weed spread (for example, avoiding known weed infestation areas when locating fire lines). • Evaluate options, including closure, to regulate the flow of traffic on sites where desired vegetation needs to be established. Sites could include road and trail rights-of-way (ROW), and other areas of disturbed soils.

In addition to these handbooks and policy, use of native and non-native seed in revegetation and restoration is guided by BLM Manual 1745 (*Introduction, Transplant, Augmentation and Reestablishment of Fish, Wildlife and Plants*). This manual states that native species shall be used, unless it is determined through the NEPA process that: 1) suitable native species are not available; 2) the natural biological diversity of the proposed management area will not be diminished; 3) exotic and naturalized species can be confined within the proposed management area; 4) analysis of ecological site inventory information indicates that a site will not support reestablishment of a species that historically was part of the natural environment; or 5) resource management objectives cannot be met with native species.

When natural recovery is not feasible, revegetation can be used to stabilize and restore vegetation on disturbed sites and to eliminate or reduce the conditions that favor invasive species. Reseeding or replanting may be required when there is insufficient vegetation or seed stores to naturally revegetate the site.

To ensure revegetation success, there must be adequate soil for root development and moisture storage, which provides moisture to support the new plants. Chances for revegetation success are improved by selecting seed with high purity and percentage germination; selecting native species or cultivars adapted to the area; planting at proper depth, seeding rate, and time of the year for the region; choosing the appropriate planting method; and, where feasible, removing competing vegetation. Planting mixtures are adapted for the treatment area and site uses. A combination of forbs, perennial grasses, and shrubs is typically used on rangeland sites, while shrubs and trees might be favored for riparian and forestland sites. A mixture of several native plant species and types or functional groups enhances the value of the site for fish and wildlife and improves the health and aesthetic character of the site. Mixtures can better take advantage of variable soil, terrain, and climatic conditions, and thus are more likely to withstand insect infestations and survive adverse climatic conditions.

The USDI BLM Native Seed program was developed in response to Congressional direction to supply native plant material for emergency stabilization and longer-term rehabilitation and restoration efforts. The focus of the program is to increase the number of native plant species for which seed is available and the total amount of native seed available for these efforts. To date, the program has focused on native plant material needs of emergency stabilization and burned area rehabilitation in the Great Basin, but is expanding to focus on areas such as western Oregon, the Colorado Plateau, and most recently the Mojave Desert. The Wildland Fire Management Program funds and manages the effort.

The National Seed Warehouse is a storage facility for the native seed supply. Through a Memorandum of

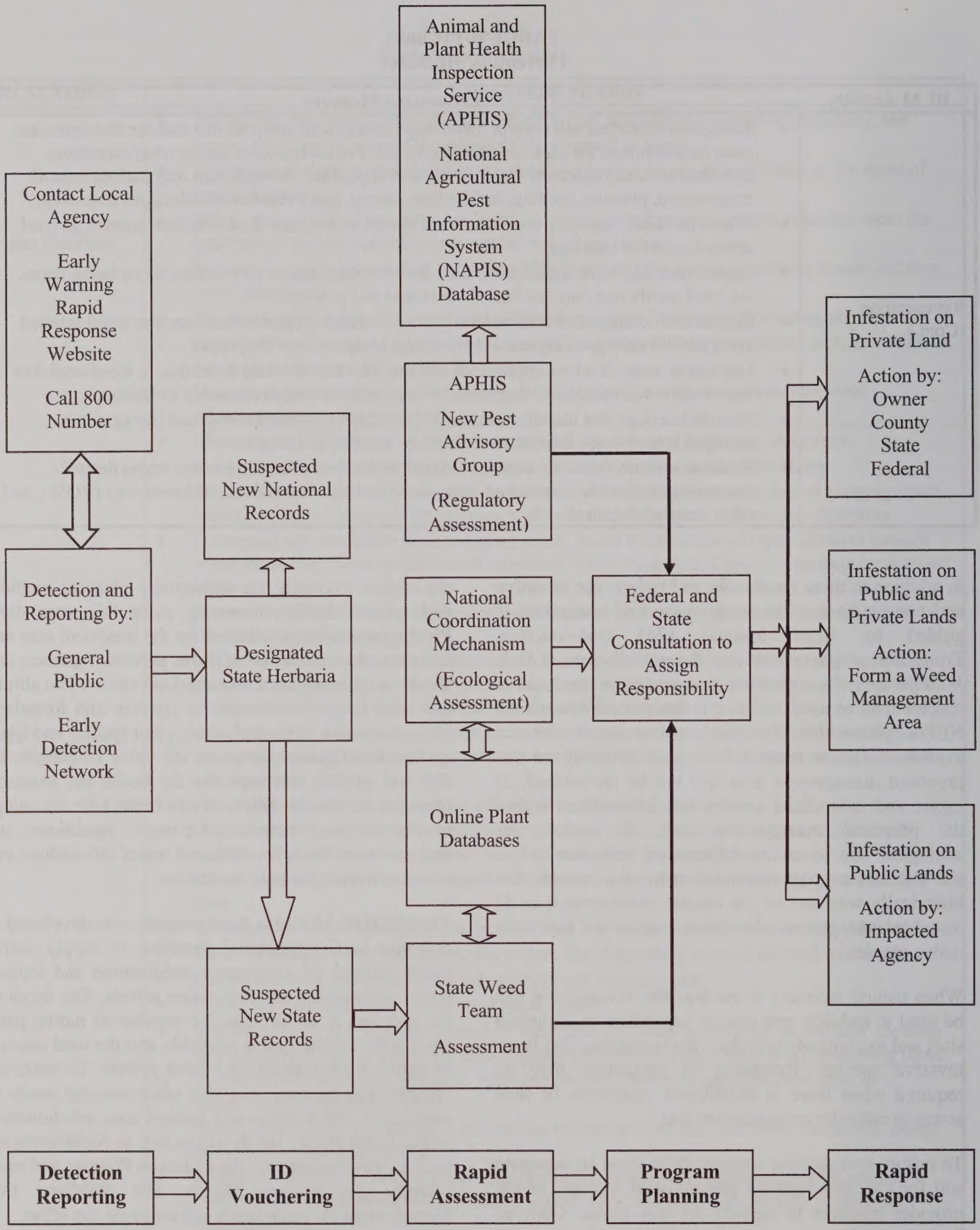

Animal and Plant Health Inspection Service (APHIS)
National Agricultural Pest Information System (NAPIS) Database
Contact Local Agency
Early Warning Rapid Response Website
Call 800 Number
APHIS
New Pest Advisory Group
(Regulatory Assessment)
Suspected New National Records
Infestation on Private Land
Action by: Owner County State Federal
Detection and Reporting by:
General Public
Early Detection Network
Designated State Herbaria
National Coordination Mechanism
(Ecological Assessment)
Federal and State Consultation to Assign Responsibility
Infestation on Public and Private Lands
Action: Form a Weed Management Area
Online Plant Databases
Infestation on Public Lands
Action by: Impacted Agency
Suspected New State Records
State Weed Team
Assessment
Detection Reporting
ID Vouchering
Rapid Assessment
Program Planning
Rapid Response

Figure B-1. National Early Warning and Rapid Response System for Invasive Plants.

Understanding with the BLM Idaho State Director, each state (Idaho, Oregon, Nevada, Utah and Colorado) can reserve an annual seed supply for purchase based on a reasonable projection of annual acreage to be stabilized or rehabilitated over a 5-year period.

The Great Basin Restoration Initiative (GBRI) grew out of concern for the health of the Great Basin after the wildfires of 1999. The goal of GBRI is to implement treatments and strategies to maintain functioning ecosystems and to proactively restore degraded ones at strategic locations. Native plants are emphasized in restoration projects where their use is practical and the potential for success is satisfactory. Monitoring is recommended to measure treatment success. To increase the availability of native plants, especially native forbs, the GBRI has established a collaborative native plant project, the Great Basin Native Plant Selection and Increase Project, to increase native plant availability and the technology to successfully establish these plants. This project is supported by funding from the BLM's Native Plant Initiative.

The BLM will follow the following SOPs when revegetating sites:

- Cultivate previously disturbed sites to reduce the amount of weed seeds in the soil seedbank.
- Revegetate sites once work is completed or soon after a disturbance.
- When available, use native seed of known origin as labeled by state seed certification programs.
- Use seed of non-native cultivars and species only when locally adapted native seed is not available or when it is unlikely to establish quickly enough to prevent soil erosion or weed establishment.
- Use seed that is free of noxious and invasive weeds, as determined and documented by a seed inspection test by a certified seed laboratory.
- Limit nitrogen fertilizer applications that favor annual grass growth over forb growth in newly seeded areas, especially where downy brome (cheatgrass) and other invasive annuals are establishing.
- Use clean equipment, free of plants and plant parts, on revegetation projects to prevent the inadvertent introduction of weeds into the site.
- Where important pollinator resources exist, include native nectar and pollen producing plants in the seed mixes used in restoration and reclamation projects. Include non-forage plant species in seed mixes for their pollinator/host relationships as foraging, nesting, or shelter species. Choose native plant species over manipulated cultivars, especially of forbs and shrubs, since natives tend to have more valuable pollen and nectar resources than cultivars. Ensure that bloom times for the flowers of the species chosen match the activity times for the pollinators. Maintain sufficient litter on the soil surfaces of native plant communities for ground-nesting bees.
- Where feasible, avoid grazing by domestic and wild animals on treatment sites until vegetation is well established. Where total rest from grazing is not feasible, efforts should be made to modify the amount and/or season of grazing to promote vegetation recovery within the treatment area. Reductions in grazing animal numbers, permanent or temporary fencing, changes in grazing rotation, and identification of alternative forage sources are examples of methods that could be used to remove, reduce or modify grazing impacts during vegetation recovery.

Special Precautions

Special Status Species

Federal policies and procedures for protecting federally-listed threatened and endangered plant and animal species, and species proposed for listing, were established by the Endangered Species Act of 1973 and regulations issued pursuant to the Act. The purposes of the Act are to provide mechanisms for the conservation of threatened and endangered species and their habitats. Under the Act, the Secretary of the Interior is required to determine which species are threatened or endangered and to issue recovery plans for those species.

Section 7 of the Act specifically requires all federal agencies to use their authorities in furtherance of the Act to carry out programs for the conservation of listed species, and to ensure that no agency action is likely to jeopardize the continued existence of a listed species or adversely modify critical habitat. Policy and guidance (BLM Manual 6840; *Special Status Species*) also stipulates that species proposed for listing must be managed at the same level of protection as listed species.

The BLM state directors may designate special status in cooperation with their respective state. These special status species must receive, at a minimum, the same level of protection as federal candidate species. The BLM will also carry out management for the conservation of state-listed species, and state laws protecting these species will apply to all BLM programs and actions to the extent that they are consistent with Federal Land Policy and Management Act (FLPMA) and other federal laws.

The BLM consulted with the U.S. Fish and Wildlife Service (UFWS) and National Marine Fisheries Service (NMFS) during development of the *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS) as required under Section 7 of the Endangered Species Act. As part of this process, the BLM prepared a formal consultation package that included a description of the program; species listed as threatened or endangered, species proposed for listing, and critical habitats that could be affected by the program; and a Biological Assessment (BA) that evaluated the likely impacts to listed species, species proposed for listing, and critical habitats from the proposed vegetation treatment program. Over 300 species were evaluated in the BA. The BA also provides broad guidance at a programmatic level for actions that will be taken by the BLM to avoid adversely impacting species or critical habitat.

Before any vegetation treatment or ground disturbance occurs, BLM policy requires a survey of the project site for species listed or proposed for listing, or special status species. This is done by a qualified biologist and/or botanist who consults the state and local databases and visits the site at the appropriate season. If a proposed project may affect a proposed or listed species or its critical habitat, the BLM consults with the USFWS and/or NMFS. A project with a "may affect, likely to adversely affect" determination requires formal consultation and receives a Biological Opinion from the USFWS and/or NMFS. A project with a "may affect, not likely to adversely affect" determination requires informal consultation and receives a concurrence letter from USFWS and/or NMFS, unless that action is implemented under the authorities of the alternative consultation agreement pursuant to counterpart regulations established for *National Fire Plan* projects.

Wilderness Areas

Wilderness areas, which are designated by Congress, are defined by the Wilderness Act of 1964 as places "where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." The BLM manages 175 Wilderness Areas encompassing over 7.2 million acres.

Activities allowed in wilderness areas are identified in wilderness management plans prepared by the BLM. The BLM does not ordinarily treat vegetation in wilderness areas, but will control invasive and noxious weeds when they threaten lands outside wilderness area or are spreading within the wilderness and can be controlled without serious adverse impacts to wilderness values.

Management of vegetation in a wilderness area is directed toward retaining the natural character of the environment. Tree and shrub removal is usually not allowed, except for fire, insect, or disease control. Reforestation is generally prohibited except to repair damage caused by humans in areas where natural reforestation is unlikely. Only native species and primitive methods, such as hand planting, are allowed for reforestation.

Tools and equipment may be used for vegetation management when they are the minimum amount necessary for the protection of the wilderness resource. Motorized tools may only be used in special or emergency cases involving the health and safety of wilderness visitors, or the protection of wilderness values.

Habitat manipulation using mechanical or chemical means may be allowed to protect threatened and endangered species and to correct unnatural conditions, such as weed infestations, resulting from human influence.

The BLM also manages a total of 610 Wilderness Study Areas (WSAs) encompassing nearly 14.3 million acres. These are areas that have been determined to have wilderness characteristics worthy of consideration for wilderness designation. The BLM's primary goals in WSAs are to manage them so as to not impair their wilderness values and to maintain their suitability for preservation as wilderness until Congress makes a determination on their future.

In WSAs, the BLM must foster a natural distribution of native species of plants and animals by ensuring that ecosystems and processes continue to function naturally.

Cultural Resources

The effects of BLM actions on cultural resources are addressed through compliance with the National Historic Preservation Act, as implemented through a national Programmatic Agreement (*Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act*) and state-specific protocol agreements with State Historic Preservation Officers (SHPOs). The BLM's responsibilities under these authorities are addressed as early in the vegetation management project planning process as possible.

The BLM meets its responsibilities for consultation and government-to-government relationships with Native American tribes by consulting with appropriate tribal representatives prior to taking actions that affect tribal interests. The BLM's tribal consultation policies are detailed in BLM Manual 8120 (*Tribal Consultation Under Cultural Resource Authorities)* and Handbook H-8120-1 (*Guidelines for Conducting Tribal Consultation).* The BLM consulted with Native American tribes and Alaska Native groups during development of the PEIS. Information gathered on important tribal resources and potential impacts to these resources from herbicide treatments is presented in the analysis of impacts.

When conducting vegetation treatments, field office personnel consult with relevant parties (including tribes, native groups, and SHPOs), assess the potential of the proposed treatment to affect cultural and subsistence resources, and devise inventory and protection strategies suitable to the types of resources present and the potential impacts to them.

Herbicide treatments, for example, are unlikely to affect buried cultural resources, but might have a negative effect on traditional cultural properties comprised of plant foods or materials significant to local tribes and native groups. These treatments require inventory and protection strategies that reflect the different potential of each treatment to affect various types of cultural resources.

Impacts to significant cultural resources are avoided through project redesign or are mitigated through data recovery, recordation, monitoring, or other appropriate measures. When cultural resources are discovered during vegetation treatment, appropriate actions are taken to protect these resources.

TABLE B-2
Standard Operating Procedures for Applying Herbicides

Resource Element	Standard Operating Procedure
Guidance Documents	BLM Handbook H-9011-1 (*Chemical Pest Control*); and manuals 1112 (*Safety*), 9011 (*Chemical Pest Control*), 9012 (*Expenditure of Rangeland Insect Pest Control Funds*), 9015 (*Integrated Weed Management)*, and 9220 (*Integrated Pest Management*).
General	• Prepare operational and spill contingency plan in advance of treatment. • Conduct a pretreatment survey before applying herbicides. • Select herbicide that is least damaging to the environment while providing the desired results. • Select herbicide products carefully to minimize additional impacts from degradates, adjuvants, inert ingredients, and tank mixtures. • Apply the least amount of herbicide needed to achieve the desired result. • Follow herbicide product label for use and storage. • Have licensed applicators apply herbicides. • Use only USEPA-approved herbicides and follow product label directions and "advisory" statements. • Review, understand, and conform to the "Environmental Hazards" section on the herbicide product label. This section warns of known pesticide risks to the environment and provides practical ways to avoid harm to organisms or to the environment. • Consider surrounding land use before assigning aerial spraying as a treatment method and avoid aerial spraying near agricultural or densely populated areas. • Minimize the size of application area, when feasible. • Comply with herbicide-free buffer zones to ensure that drift will not affect crops or nearby residents/landowners. • Post treated areas and specify reentry or rest times, if appropriate. • Notify adjacent landowners prior to treatment. • Keep a copy of Material Safety Data Sheets (MSDSs) at work sites. MSDSs are available for review at http://www.cdms.net/. • Keep records of each application, including the active ingredient, formulation, application rate, date, time, and location. • Avoid accidental direct spray and spill conditions to minimize risks to resources. • Consider surrounding land uses before aerial spraying. • Avoid aerial spraying during periods of adverse weather conditions (snow or rain imminent, fog, or air turbulence). • Make helicopter applications at a target airspeed of 40 to 50 miles per hour (mph), and at about 30 to 45 feet above ground. • Take precautions to minimize drift by not applying herbicides when winds exceed >10 mph (>6 mph for aerial applications), or a serious rainfall event is imminent. • Use drift control agents and low volatile formulations. • Conduct pre-treatment surveys for sensitive habitat and special status species within or adjacent to proposed treatment areas. • Consider site characteristics, environmental conditions, and application equipment in order to minimize damage to non-target vegetation. • Use drift reduction agents, as appropriate, to reduce the drift hazard to non-target species. • Turn off applied treatments at the completion of spray runs and during turns to start another spray run. • Refer to the herbicide product label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Clean OHVs to remove seeds.

TABLE B-2 (Cont.)
Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Air Quality See Manual 7000 (*Soil, Water, and Air Management*)	• Consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks. • Apply herbicides in favorable weather conditions to minimize drift. For example, do not treat when winds exceed 10 mph (>6 mph for aerial applications) or rainfall is imminent. • Use drift reduction agents, as appropriate, to reduce the drift hazard. • Select proper application equipment (e.g., spray equipment that produces 200- to 800-micron diameter droplets [spray droplets of 100 microns and less are most prone to drift]). • Select proper application methods (e.g., set maximum spray heights, use appropriate buffer distances between spray sites and non-target resources).
Soil See Manual 7000 (*Soil, Water, and Air Management*)	• Minimize treatments in areas where herbicide runoff is likely, such as steep slopes when heavy rainfall is expected. • Minimize use of herbicides that have high soil mobility, particularly in areas where soil properties increase the potential for mobility. • Do not apply granular herbicides on slopes of more than 15% where there is the possibility of runoff carrying the granules into non-target areas.
Water Resources See Manual 7000 (*Soil, Water, and Air Management*)	• Consider climate, soil type, slope, and vegetation type when developing herbicide treatment programs. • Select herbicide products to minimize impacts to water. This is especially important for application scenarios that involve risk from active ingredients in a particular herbicide, as predicted by risk assessments. • Use local historical weather data to choose the month of treatment. Considering the phenology of the target species, schedule treatments based on the condition of the water body and existing water quality conditions. • Plan to treat between weather fronts (calms) and at appropriate time of day to avoid high winds that increase water movements, and to avoid potential stormwater runoff and water turbidity. • Review hydrogeologic maps of proposed treatment areas. Note depths to groundwater and areas of shallow groundwater and areas of surface water and groundwater interaction. Minimize treating areas with high risk for groundwater contamination. • Conduct mixing and loading operations in an area where an accidental spill would not contaminate an aquatic body. • Do not rinse spray tanks in or near water bodies. Do not broadcast pellets where there is danger of contaminating water supplies. • Maintain buffers between treatment areas and water bodies. Buffer widths should be developed based on herbicide- and site-specific criteria to minimize impacts to water bodies. • Minimize the potential effects to surface water quality and quantity by stabilizing terrestrial areas as quickly as possible following treatment.
Wetlands and Riparian Areas	• Use a selective herbicide and a wick or backpack sprayer. • Use appropriate herbicide-free buffer zones for herbicides not labeled for aquatic use based on risk assessment guidance, with minimum widths of 100 feet for aerial, 25 feet for vehicle, and 10 feet for hand spray applications.
Vegetation See Handbook H-4410-1 (*National Range Handbook*), and manuals 5000 (*Forest Management*) and 9015 (*Integrated Weed Management*)	• Refer to the herbicide label when planning revegetation to ensure that subsequent vegetation would not be injured following application of the herbicide. • Use native or sterile species for revegetation and restoration projects to compete with invasive species until desired vegetation establishes. • Use weed-free feed for horses and pack animals. Use weed-free straw and mulch for revegetation and other activities. • Identify and implement any temporary domestic livestock grazing and/or supplemental feeding restrictions needed to enhance desirable vegetation recovery following treatment. Consider adjustments in the existing grazing permit, to maintain desirable vegetation on the treatment site.

TABLE B-2 (Cont.)
Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Pollinators	• Complete vegetation treatments seasonally before pollinator foraging plants bloom. • Time vegetation treatments to take place when foraging pollinators are least active both seasonally and daily. • Design vegetation treatment projects so that nectar and pollen sources for important pollinators and resources are treated in patches rather than in one single treatment. • Minimize herbicide application rates. Use typical rather than maximum rates where there are important pollinator resources. • Maintain herbicide free buffer zones around patches of important pollinator nectar and pollen sources. • Maintain herbicide free buffer zones around patches of important pollinator nesting habitat and hibernacula. • Make special note of pollinators that have single host plant species, and minimize herbicide spraying on those plants (if invasive species) and in their habitats.
Fish and Other Aquatic Organisms See manuals 6500 (*Wildlife and Fisheries Management*) and 6780 (*Habitat Management Plans*)	• Use appropriate buffer zones based on label and risk assessment guidance. • Minimize treatments near fish-bearing water bodies during periods when fish are in life stages most sensitive to the herbicide(s) used, and use spot rather than broadcast or aerial treatments. • Use appropriate application equipment/method near water bodies if the potential for off-site drift exists. • For treatment of aquatic vegetation, 1) treat only that portion of the aquatic system necessary to achieve acceptable vegetation management, 2) use the appropriate application method to minimize the potential for injury to desirable vegetation and aquatic organisms, and 3) follow water use restrictions presented on the herbicide label.
Wildlife See manuals 6500 (*Wildlife and Fisheries Management*) and 6780 (*Habitat Management Plans*)	• Use herbicides of low toxicity to wildlife, where feasible. • Use spot applications or low-boom broadcast operations where possible to limit the probability of contaminating non-target food and water sources, especially non-target vegetation over areas larger than the treatment area. • Use timing restrictions (e.g., do not treat during critical wildlife breeding or staging periods) to minimize impacts to wildlife.
Threatened, Endangered, and Sensitive Species See Manual 6840 (*Special Status Species*)	• Survey for special status species before treating an area. Consider effects to special status species when designing herbicide treatment programs. • Use a selective herbicide and a wick or backpack sprayer to minimize risks to special status plants. • Avoid treating vegetation during time-sensitive periods (e.g., nesting and migration, sensitive life stages) for special status species in area to be treated.
Livestock See Handbook H-4120-1 (*Grazing Management*)	• Whenever possible and whenever needed, schedule treatments when livestock are not present in the treatment area. Design treatments to take advantage of normal livestock grazing rest periods, when possible. • As directed by the herbicide product label, remove livestock from treatment sites prior to herbicide application, where applicable. • Use herbicides of low toxicity to livestock, where feasible. • Take into account the different types of application equipment and methods, where possible, to reduce the probability of contamination of non-target food and water sources. • Avoid use of diquat in riparian pasture while pasture is being used by livestock. • Notify permittees of the herbicide treatment project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Notify permittees of livestock grazing, feeding, or slaughter restrictions, if necessary. • Provide alternative forage sites for livestock, if possible.

TABLE B-2 (Cont.)
Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Wild Horses and Burros	• Minimize using herbicides in areas grazed by wild horses and burros. • Use herbicides of low toxicity to wild horses and burros, where feasible. • Remove wild horses and burros from identified treatment areas prior to herbicide application, in accordance with herbicide product label directions for livestock. • Take into account the different types of application equipment and methods, where possible, to reduce the probability of contaminating non-target food and water sources.
Cultural Resources and Paleontological Resources See handbooks H-8120-1 (*Guidelines for Conducting Tribal Consultation*) and H-8270-1 (*General Procedural Guidance for Paleontological Resource Management*), and manuals 8100 (*The Foundations for Managing Cultural Resources*), 8120 (*Tribal Consultation Under Cultural Resource Authorities*), and 8270 (*Paleontological Resource Management*) See also: *Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act*	• Follow standard procedures for compliance with Section 106 of the National Historic Preservation Act as implemented through the *Programmatic Agreement among the Bureau of Land Management, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Manner in Which BLM Will Meet Its Responsibilities Under the National Historic Preservation Act* and state protocols or 36 Code of Federal Regulations Part 800, including necessary consultations with State Historic Preservation Officers and interested tribes. • Follow BLM Handbook H-8270-1 (*General Procedural Guidance for Paleontological Resource Management*) to determine known Condition I and Condition 2 paleontological areas, or collect information through inventory to establish Condition 1 and Condition 2 areas, determine resource types at risk from the proposed treatment, and develop appropriate measures to minimize or mitigate adverse impacts. • Consult with tribes to locate any areas of vegetation that are of significance to the tribe and that might be affected by herbicide treatments. • Work with tribes to minimize impacts to these resources. • Follow guidance under Human Health and Safety in the PEIS in areas that may be visited by Native peoples after treatments.
Visual Resources See handbooks H-8410-1 (*Visual Resource Inventory*) and H-8431-1 (*Visual Resource Contrast Rating*), and manual 8400 (*Visual Resource Management*)	• Minimize the use of broadcast foliar applications in sensitive watersheds to avoid creating large areas of browned vegetation. • Consider the surrounding land use before assigning aerial spraying as an application method. • Minimize off-site drift and mobility of herbicides (e.g., do not treat when winds exceed 10 mph; minimize treatment in areas where herbicide runoff is likely; establish appropriate buffer widths between treatment areas and residences) to contain visual changes to the intended treatment area. • If the area is a Class I or II visual resource, ensure that the change to the characteristic landscape is low and does not attract attention (Class I), or if seen, does not attract the attention of the casual viewer (Class II). • Lessen visual impacts by: 1) designing projects to blend in with topographic forms; 2) leaving some low-growing trees or planting some low-growing tree seedlings adjacent to the treatment area to screen short-term effects; and 3) revegetating the site following treatment. • When restoring treated areas, design activities to repeat the form, line, color, and texture of the natural landscape character conditions to meet established Visual Resource Management (VRM) objectives.

TABLE B-2 (Cont.)
Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Wilderness and Other Special Areas See handbooks H-8550-1 (*Management of Wilderness Study Areas (WSAs)*), and H-8560-1 (*Management of Designated Wilderness Study Areas*), and Manual 8351 (*Wild and Scenic Rivers*)	• Encourage backcountry pack and saddle stock users to feed their livestock only weed-free feed for several days before entering a wilderness area. • Encourage stock users to tie and/or hold stock in such a way as to minimize soil disturbance and loss of native vegetation. • Revegetate disturbed sites with native species if there is no reasonable expectation of natural regeneration. • Provide educational materials at trailheads and other wilderness entry points to educate the public on the need to prevent the spread of weeds. • Use the "minimum tool" to treat noxious and invasive vegetation, relying primarily on the use of ground-based tools, including backpack pumps, hand sprayers, and pumps mounted on pack and saddle stock. • Use chemicals only when they are the minimum method necessary to control weeds that are spreading within the wilderness or threaten lands outside the wilderness. • Give preference to herbicides that have the least impact on non-target species and the wilderness environment. • Implement herbicide treatments during periods of low human use, where feasible. • Address wilderness and special areas in management plans. • Maintain adequate buffers for Wild and Scenic Rivers (¼ mile on either side of river, ½ mile in Alaska).
Recreation See Handbook H-1601-1 (*Land Use Planning Handbook, Appendix C*)	• Schedule treatments to avoid peak recreational use times, while taking into account the optimum management period for the targeted species. • Notify the public of treatment methods, hazards, times, and nearby alternative recreation areas. • Adhere to entry restrictions identified on the herbicide product label for public and worker access. • Post signs noting exclusion areas and the duration of exclusion, if necessary. • Use herbicides during periods of low human use, where feasible.
Social and Economic Values	• Consider surrounding land use before selecting aerial spraying as a method, and avoid aerial spraying near agricultural or densely-populated areas. • Post treated areas and specify reentry or rest times, if appropriate. • Notify grazing permittees of livestock feeding restrictions in treated areas, if necessary, as per herbicide product label instructions. • Notify the public of the project to improve coordination and avoid potential conflicts and safety concerns during implementation of the treatment. • Control public access until potential treatment hazards no longer exist, per herbicide product label instructions. • Observe restricted entry intervals specified by the herbicide product label. • Notify local emergency personnel of proposed treatments. • Use spot applications or low-boom broadcast applications where possible to limit the probability of contaminating non-target food and water sources, especially vegetation over areas larger than the treatment area. • Consult with Native American tribes and Alaska Native groups to locate any areas of vegetation that are of significance to the tribes and Native groups and that might be affected by herbicide treatments. • To the degree possible within the law, hire local contractors and workers to assist with herbicide application projects and purchase materials and supplies, including chemicals, for herbicide treatment projects through local suppliers. • To minimize fears based on lack of information, provide public educational information on the need for vegetation treatments and the use of herbicides in an integrated pest management program for projects proposing local use of herbicides.

TABLE B-2 (Cont.)
Standard Operating Procedures for Applying Pesticides

Resource Element	Standard Operating Procedure
Rights-of-way	• Coordinate vegetation management activities where joint or multiple use of a ROW exists. • Notify other public land users within or adjacent to the ROW proposed for treatment. • Use only herbicides that are approved for use in ROW areas.
Human Health and Safety	• Establish a buffer between treatment areas and human residences based on guidance given in the HHRA, with a minimum buffer of ¼ mile for aerial applications and 100 feet for ground applications, unless a written waiver is granted. • Use protective equipment as directed by the herbicide product label. • Post treated areas with appropriate signs at common public access areas. • Observe restricted entry intervals specified by the herbicide product label. • Provide public notification in newspapers or other media where the potential exists for public exposure. • Have a copy of MSDSs at work site. • Notify local emergency personnel of proposed treatments. • Contain and clean up spills and request help as needed. • Secure containers during transport. • Follow label directions for use and storage. • Dispose of unwanted herbicides promptly and correctly.

APPENDIX B

HERBICIDES APPROVED FOR USE ON PUBLIC LANDS IN CALIFORNIA

*Herbicides Approved for Use on BLM Lands**

Update October 10, 2008

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Bromacil	AK, AZ, CA, CO, ID, MT, ND,	Bromacil 80DF	Alligare, LLC	81927-4	Y
	NE, NM, NV, OK, SD, TX, UT,	Hyvar X	DuPont	352-287	Y
	WA, WY	Hyvar XL	DuPont	352-346	Y
Bromacil + Diuron	AK, AZ, CA, CO, ID, MT, ND,	Bromacil/Diuron 40/40	Alligare, LLC	81927-3	Y
	NE, NM, NV, OK, SD, TX, UT,	Krovar I DF	DuPont	352-505	Y
	WA, WY	Weed Blast Res. Weed Cont.	Loveland Products Inc.	34704-576	N
		DiBro 2+2	Nufarm Americas Inc.	228-227	Y
		DiBro 4+4	Nufarm Americas Inc.	228-235	N
		DiBro 4+2	Nufarm Americas Inc.	228-386	N
		Weed Blast 4G	SSI Maxim	34913-19	N
Chlorsulfuron	AK, AZ, CA, CO, ID, MT, ND,	Telar DF	DuPont	352-522	Y
	NE, NM, NV, OK, SD, TX, UT,	Telar XP	DuPont	352-654	Y
	WA, WY				
Clopyralid	AK, AZ, CA, CO, ID, MT, ND,	Spur	Albaugh, Inc.	42750-89	N
	NE, NM, NV, OK, SD, TX, UT,	Pyramid R&P	Albaugh, Inc.	42750-94	N
	WA, WY	Clopyralid 3	Alligare, LLC	42750-94-81927	Y
		Cody Herbicide	Alligare, LLC	81927-28	Y
		Reclaim	Dow AgroSciences	62719-83	N
		Stinger	Dow AgroSciences	62719-73	Y
		Transline	Dow AgroSciences	62719-259	Y
		CleanSlate	Nufarm Americas Inc.	228-491	Y
Clopyralid + 2,4-D	AK, AZ, CA, CO, ID, MT, ND,	Curtail	Dow AgroSciences	62719-48	N
	NE, NM, NV, OK, SD, TX, UT,	Commando	Albaugh, Inc.	42750-92	N
	WA, WY				

APPENDIX B HERBICIDES APPROVED FOR USE ON PUBLIC LANDS IN CALIFORNIA

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
2,4-D	AK, AZ, CA, CO, ID, MT, ND,	Agrisolution 2,4-D LV6	Agriliance, L.L.C.	1381-101	N
	NE, NM, NV, OK, OR, SD, TX,	Agrisolution 2,4-D Amine 4	Agriliance, L.L.C.	1381-103	N
	UT, WA, WY	Agrisolution 2,4-D LV4	Agriliance, L.L.C.	1381-102	N
		2,4-D Amine 4	Albaugh, Inc./Agri Star	42750-19	Y
		2,4-D LV 4	Albaugh, Inc./Agri Star	42750-15	Y
		Solve 2,4-D	Albaugh, Inc./Agri Star	42750-22	Y
		2,4-D LV 6	Albaugh, Inc./Agri Star	42750-20	N
		Five Star	Albaugh, Inc./Agri Star	42750-49	N
		D-638	Albaugh, Inc./Agri Star	42750-36	N
		2,4-D LV6	Helena Chem. Co.	4275-20-5905	N
		2,4-D Amine	Helena Chem. Co.	5905-72	N
		Opti-Amine	Helena Chem. Co.	5905-501	N
		Barrage HF	Helena	5905-529	N
		HardBall	Helena	5905-549	N
		Unison	Helena	5905-542	N
		Amine 4CA 2,4-D Weed Killer	Loveland Products Inc.	34704-5	Y
		Clean Amine	Loveland Products Inc.	34704-120	N
		Low Vol 4 Ester Weed Killer	Loveland Products Inc.	34704-124	N
		Low Vol 6 Ester Weed Killer	Loveland Products Inc.	34704-125	N
		LV-6 Ester Weed Killer	Loveland Products Inc.	34704-6	Y
		Saber	Loveland Products Inc.	34704-803	N
		Saber CA	Loveland Products Inc.	34704-803	Y
		Salvo	Loveland Products Inc.	34704-609	N
		Savage DF	Loveland Products Inc.	34704-606	Y
		Aqua-Kleen	NuFarm Americas Inc.	71368-4	N
		Esteron 99C	NuFarm Americas Inc.	62719-9-71368	N
		Weedar 64	NuFarm Americas Inc.	71368-1	Y
		Weedone LV-4	NuFarm Americas Inc.	228-139-71368	Y
		Weedone LV-4 Solventless	NuFarm Americas Inc.	71368-14	Y
		Weedone LV-6	NuFarm Americas Inc.	71368-11	Y
		Formula 40	Nufarm Americas Inc.	228-357	Y
		2,4-D LV 6 Ester	Nufarm Americas Inc.	228-95	Y
		Platoon	Nufarm Americas Inc.	228-145	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
2,4-D - cont.	AK, AZ, CA, CO, ID, MT, ND,	WEEDstroy AM-40	Nufarm Americas Inc.	228-145	Y
	NE, NM, NV, OK, OR, SD, TX,	Hi-Dep	PBI Gordon Corp.	2217-703	N
	UT, WA, WY	2,4-D Amine	Setre (Helena)	5905-72	N
		Barrage LV Ester	Setre (Helena)	5905-504	N
		2,4-D LV4	Setre (Helena)	5905-90	N
		2,4-D LV6	Setre (Helena)	5905-93	N
		Clean Crop Amine 4	UAP-Platte Chem. Co.	34704-5 CA	Y
		Clean Crop Low Vol 6 Ester	UAP-Platte Chem. Co.	34704-125	N
		Salvo LV Ester	UAP-Platte Chem. Co.	34704-609	N
		2,4-D 4# Amine Weed Killer	UAP-Platte Chem. Co.	34704-120	N
		Clean Crop LV-4 ES	UAP-Platte Chem. Co.	34704-124	N
		Savage DF	UAP-Platte Chem. Co.	34704-606	Y
		Cornbelt 4 lb. Amine	Van Diest Supply Co.	11773-2	N
		Cornbelt 4# LoVol Ester	Van Diest Supply Co.	11773-3	N
		Cornbelt 6# LoVol Ester	Van Diest Supply Co.	11773-4	N
		Amine 4	Wilbur-Ellis Co.	2935-512	N
		Lo Vol-4	Wilbur-Ellis Co.	228-139-2935	N
		Lo Vol-6 Ester	Wilbur-Ellis Co.	228-95-2935	N
		Agrisolution 2,4-D LV6	Winflied Solutions, LLC	1381-101	N
		Agrisolution 2,4-D Amine 4	Winfield Solutions, LLC	1381-103	N
		Agrisolution 2,4-D LV4	Winfield Solutions, LLC	1381-102	N
Dicamba	AK, AZ, CA, CO, ID, MT, ND,	Dicamba DMA	Albaugh, Inc./Agri Star	42750-40	N
	NE, NM, NV, OK, OR, SD, TX,	Vision	Albaugh, Inc.	42750-98	N
	UT, WA, WY	Cruise Control	Alligare, LLC	42750-40-81927	N
		Banvel	Arysta LifeScience N.A. Corp.	66330-276	Y
		Clarity	BASF Ag. Products	7969-137	Y
		Rifle	Loveland Products Inc.	34704-861	Y
		Banvel	Micro Flo Company	51036-289	Y
		Diablo	Nufarm Americas Inc.	228-379	Y
		Vanquish Herbicide	Nufarm Americas Inc.	228-397	Y
		Vanquish	Syngenta	100-884	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Dicamba + 2,4-D	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	Outlaw	Albaugh, Inc./Agri Star	42750-68	N
		Range Star	Albaugh, Inc./Agri Star	42750-55	N
		Weedmaster	BASF Ag. Products	7969-133	Y
		Rifle-D	Loveland Products Inc.	34704-869	N
		KambaMaster	Nufarm Americas Inc.	71368-34	N
		Veteran 720	Nufarm Americas Inc.	228-295	Y
Dicamba + Diflufenzopyr	AZ, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Distinct	BASF Ag. Products	7969-150	N
		Overdrive	BASF Ag. Products	7969-150	N
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.					
Diquat	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Reward	Syngenta Crop Prot., Inc.	100-1091	Y
Diuron	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Diuron 80DF	Agriliance, L.L.C.	9779-318	N
		Diuron 80DF	Alligare, LLC	81927-12	Y
		Karmex DF	DuPont	352-692	Y
		Karmex XP	DuPont	352-692	Y
		Karmex IWC	DuPont	352-692	Y
		Direx 4L	DuPont	352-678	Y
		Direx 80DF	Griffin Company	1812-362	Y
		Direx 4L	Griffin Company	1812-257	Y
		Diuron 4L	Loveland Products Inc.	34704-854	Y
		Diuron 80 WDG	Loveland Products Inc.	34704-648	N
		Diuron 4L	Makteshim Agan of N.A.	66222-54	N
		Diuron 80WDG	UAP-Platte Chem. Co.	34704-648	N
		Vegetation Man. Diuron 80 DF	Vegetation Man., LLC	66222-51-74477	N
		Diuron-DF	Wilbur-Ellis	00352-00-508-02935	N
		Diuron 80DF	Winfield Solutions, LLC	9779-318	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Fluridone	AK, AZ, CA, CO, ID, MT, ND,	Avast!	SePRO	67690-30	Y
	NE, NM, NV, OK, SD, TX, UT,	Sonar AS	SePRO	67690-4	Y
	WA, WY	Sonar Precision Release	SePRO	67690-12	Y
		Sonar Q	SePRO	67690-3	Y
		Sonar SRP	SePRO	67690-3	Y
Glyphosate	AK, AZ, CA, CO, ID, MT, ND,	Aqua Star	Albaugh, Inc./Agri Star	42750-59	Y
	NE, NM, NV, OK, OR, SD, TX,	Forest Star	Albaugh, Inc./Agri Star	42570-61	Y
	UT, WA, WY	Gly Star Original	Albaugh, Inc./Agri Star	42750-60	Y
		Gly Star Plus	Albaugh, Inc./Agri Star	42750-61	Y
		Gly Star Pro	Albaugh, Inc./Agri Star	42750-61	Y
		Glyphosate 4 PLUS	Alligare, LLC	81927-9	Y
		Glyphosate 5.4	Alligare, LLC	81927-8	Y
		Glyfos	Cheminova	4787-31	Y
		Glyfos PRO	Cheminova	67760-57	Y
		Glyfos Aquatic	Cheminova	4787-34	Y
		ClearOut 41	Chem. Prod. Tech., LLC	70829-2	N
		ClearOut 41 Plus	Chem. Prod. Tech., LLC	70829-3	N
		Accord Concentrate	Dow AgroSciences	62719-324	Y
		Accord SP	Dow AgroSciences	62719-322	Y
		Accord XRT	Dow AgroSciences	62719-517	Y
		Accord XRT II	Dow AgroSciences	62719-556	Y
		Glypro	Dow AgroSciences	62719-324	Y
		Glypro Plus	Dow AgroSciences	62719-322	Y
		Rodeo	Dow AgroSciences	62719-324	Y
		Mirage	Loveland Products Inc.	34704-889	Y
		Mirage Plus	Loveland Products Inc.	34704-890	Y
		Aquamaster	Monsanto	524-343	Y
		Roundup Original	Monsanto	524-445	Y
		Roundup Original II	Monsanto	524-454	Y
		Roundup Original II CA	Monsanto	524-475	Y
		Honcho	Monsanto	524-445	Y
		Honcho Plus	Monsanto	524-454	Y

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Glyphosate - cont.	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	Roundup PRO	Monsanto	524-475	Y
		Roundup PRO Concentrate	Monsanto	524-529	Y
		Roundup PRO Dry	Monsanto	524-505	Y
		Roundup PROMAX	Monsanto	524-579	Y
		GlyphoMate 41	PBI Gordon Corp.	2217-847	Y
		Aqua Neat	Nufarm Americas Inc.	228-365	Y
		Foresters	Nufarm Americas Inc.	228-381	Y
		Razor	Nufarm Americas Inc.	228-366	Y
		Razor Pro	Nufarm Americas Inc.	228-366	Y
		AquaPro Aquatic Herbicide	SePRO Corporation	62719-324-67690	Y
		Rattler	Setre (Helena)	524-445-5905	Y
		Buccaneer	Tenkoz	55467-10	Y
		Buccaneer Plus	Tenkoz	55467-9	Y
		Mirage Herbicide	UAP-Platte Chem. Co.	524-445-34704	Y
		Mirage Plus Herbicide	UAP-Platte Chem. Co.	524-454-34704	Y
		Glyphosate 4	Vegetation Man., LLC	73220-6-74477	Y
Glyphosate + 2,4-D	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	Landmaster BW	Albaugh, Inc./Agri Star	42570-62	N
		Campaign	Monsanto	524-351	N
		Landmaster BW	Monsanto	524-351	N
Glyphosate + Dicamba	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	Fallowmaster	Monsanto	524-507	N
Hexazinone	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Velpar ULW	DuPont	352-450	N
		Velpar L	DuPont	352-392	Y
		Velpar DF	DuPont	352-581	Y
		Pronone MG	Pro-Serve	33560-21	N
		Pronone 10G	Pro-Serve	33560-21	Y
		Pronone 25G	Pro-Serve	33560-45	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Hexazinone +	AK, AZ, CO, ID, MT, ND, NE,	Westar	DuPont Crop Protection	352-626	Y
Sulfometuron methyl	NM, NV, OK, SD, TX, UT, WA, WY	Oustar	DuPont Crop Protection	352-603	Y
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.					
Imazapic	AZ, CO, ID, MT,ND, NE, NM,	Panoramic 2SL	Alligare, LLC	66222-141-81927	N
	NV, OK, SD, TX, UT, WA, WY	Plateau	BASF	241-365	N
		Imazapic E 2 SL	Etigra, LLC	79676-65	N
Imazapic +	AZ, CO, ID, MT,ND, NE, NM,	Journey	BASF	241-417	N
Glyphosate	NV, OK, SD, TX, UT, WA, WY				
Imazapyr	AK, AZ, CA, CO, ID, MT, ND,	Imazapyr 2SL	Alligare, LLC	81927-23	N
	NE, NM, NV, OK, SD, TX, UT,	Imazapyr 4SL	Alligare, LLC	81927-24	N
	WA, WY	Ecomazapyr 2SL	Alligare, LLC	81927-22	N
		Arsenal Railroad Herbicide	BASF	241-273	N
		Chopper	BASF	241-296	Y
		Arsenal Applicators Conc.	BASF	241-299	N
		Arsenal	BASF	241-346	N
		Arsenal PowerLine	BASF	241-431	N
		Stalker	BASF	241-398	N
		Habitat	BASF	241-426	Y
		Imazapyr E-Pro 2 - VM & Aquatic Herbicide	Etigra, LLC	81959-8	Y
		Imazapyr E-Pro 4 - Forestry	Etigra, LLC	81959-9	N
		Imazapyr E-Pro 2E - Site Prep & Basal	Etigra, LLC	81959-7	N
		Polaris RR	Nufarm Americas Inc.	241-273-228	N
		Polaris SP	Nufarm Americas Inc.	241-296-228	Y
		Polaris AC	Nufarm Americas Inc.	241-299-228	Y
		Polaris AQ	Nufarm Americas Inc.	241-426-228	Y
		Polaris Herbicide	Nufarm Americas Inc.	241-346-228	N
		SSI Maxim Arsenal 0.5G	SSI Maxim Co., Inc.	34913-23	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Imazapyr - cont.	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Ecomazapyr 2 SL	Vegetation Man., LLC	74477-6	N
		Imazapyr 2 SL	Vegetation Man., LLC	74477-4	N
		Imazapyr 4 SL	Vegetation Man., LLC	74477-5	N
Imazapyr + Diuron	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Mojave 70 EG	Alligare, LLC	74477-9-81927	N
		Sahara DG	BASF	241-372	N
		Imazuron E-Pro	Etigra, LLC	79676-54	N
		SSI Maxim Topsite 2.5G	SSI Maxim Co., Inc.	34913-22	N
Imazapyr + Metsulfuron methyl	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Lineage Clearstand	DuPont	352-766	N
Imazapyr + Sulfometuron methyl + Metsulfuron methyl	AK, AZ, CA, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Lineage HWC	DuPont	352-765	N
		Lineage Prep	DuPont	352-767	N
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.					
Metsulfuron methyl	AK, AZ, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	MSM 60	Alligare, LLC	81927-7	N
		Escort DF	DuPont	352-439	N
		Escort XP	DuPont	352-439	N
		MSM E-AG 60 EG Herbicide	Etigra, LLC	81959-14	N
		MSM E-Pro 60 EG Herbicide	Etigra, LLC	81959-14	N
		Patriot	Nufarm Americas Inc.	228-391	N
		PureStand	Nufarm Americas Inc.	71368-38	N
		Metsulfuron Methyl DF	Vegetation Man., L.L.C.	74477-2	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Metsulfuron methyl + Chlorsulfuron	AK, AZ, CO, ID, MT, ND, NE, NM, NV, OK, SD, TX, UT, WA, WY	Cimarron Extra	DuPont	352-669	N
		Cimarron Plus	DuPont	352-670	N
Metsulfuron methyl + Dicamba + 2,4-D	AK, AZ, CO, ID, MT, ND, NE, NM NV, OK, SD, TX, UT, WA, WY	Cimarron MAX	DuPont	352-615	N
Picloram	AZ, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	Triumph K	Albaugh, Inc.	42750-81	N
		Triumph 22K	Albaugh, Inc.	42750-79	N
		Picloram K	Alligare, LLC	42750-81-81927	N
		Picloram K	Alligare, LLC	81927-17	N
		Picloram 22K	Alligare, LLC	42750-79-81927	N
		Picloram 22K	Alligare, LLC	81927-18	N
		Grazon PC	Dow AgroSciences	62719-181	N
		OutPost 22K	Dow AgroSciences	62719-6	N
		Tordon K	Dow AgroSciences	62719-17	N
		Tordon 22K	Dow AgroSciences	62719-6	N
Picloram + 2,4-D	AZ, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY	GunSlinger	Albaugh, Inc.	42750-80	N
		Picloram + D	Alligare, LLC	42750-80-81927	N
		Picloram + D	Alligare, LLC	81927-16	N
		Tordon 101M	Dow AgroSciences	62719-5	N
		Tordon 101 R Forestry	Dow AgroSciences	62719-31	N
		Tordon RTU	Dow AgroSciences	62719-31	N
		Grazon P+D	Dow AgroSciences	62719-182	N
		HiredHand P+D	Dow AgroSciences	62719-182	N
		Pathway	Dow AgroSciences	62719-31	N

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Sulfometuron methyl	AK, AZ, CA, CO, ID, MT, ND,	SFM 75	Alligare, LLC	81927-26	Y
	NE, NM, NV, OK, SD, TX, UT	Oust DF	DuPont	352-401	N
	WA, WY	Oust XP	DuPont	352-601	Y
		SFM E-Pro 75EG	Etigra, LLC	79676-16	Y
		Spyder	Nufarm Americas Inc.	228-408	Y
		SFM 75	Vegetation Man., L.L.C.	72167-11-74477	Y
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of these herbicides is prohibited.					
Sulfometuron methyl +	AK, AZ, CA, CO, ID, MT, ND,	Landmark XP	DuPont	352-645	Y
Chlorsulfuron	NE, NM, NV, OK, SD, TX, UT				
	WA, WY				
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of this herbicide is prohibited.					
Sulfometuron methyl +	AK, AZ, CA, CO, ID, MT, ND,	Oust Extra	DuPont	352-622	N
Metsulfuron methyl	NE, NM, NV, OK, SD, TX, UT				
	WA, WY				
NOTE: In accordance with the Record of Decision for the *Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PEIS), the aerial application of this herbicide is prohibited.					
Tebuthiuron	AZ, CA, CO, ID, MT, ND, NE,	Spike 20P	Dow AgroSciences	62719-121	Y
	NM, NV, OK, SD, TX, UT, WA,	Spike 80DF	Dow AgroSciences	62719-107	Y
	WY	SpraKil S-5 Granules	SSI Maxim Co., Inc.	34913-10	Y
Tebuthiuron +	AZ, CA, CO, ID, MT, ND, NE,	SpraKil SK-13 Granular	SSI Maxim Co., Inc.	34913-15	Y
Diuron	NM, NV, OK, SD, TX, UT, WA,	SpraKil SK-26 Granular	SSI Maxim Co., Inc.	34913-16	Y
	WY				

ACTIVE INGREDIENT	STATES WITH APPROVAL BASED UPON CURRENT EIS/ROD & COURT INJUNCTIONS	TRADE NAME	MANUFACTURER	EPA REG. NUMBER	CA REG. **
Triclopyr	AK, AZ, CA, CO, ID, MT, ND,	Triclopyr 4EC	Alligare, LLC	72167-53-74477	Y
	NE, NM, NV, OK, SD, TX, UT	Triclopyr 3	Alligare, LLC	81927-13	Y
	WA, WY	Triclopry 4	Alligare, LLC	81927-11	Y
		Element 3A	Dow AgroSciences	62719-37	Y
		Element 4	Dow AgroSciences	62719-40	Y
		Forestry Garlon XRT	Dow AgroSciences	62719-553	Y
		Garlon 3A	Dow AgroSciences	62719-37	Y
		Garlon 4	Dow AgroSciences	62719-40	Y
		Garlon 4 Ultra	Dow AgroSciences	62719-527	Y
		Remedy	Dow AgroSciences	62719-70	Y
		Remedy Ultra	Dow AgroSciences	62719-552	Y
		Pathfinder II	Dow AgroSciences	62719-176	Y
		Tahoe 3A	Nufarm Americas Inc.	228-384	Y
		Tahoe 3A	Nufarm Americas Inc.	228-518	Y
		Renovate 3	SePRO Corporation	62719-37-67690	Y
		Renovate OTF	SePRO Corporation	67690-42	Y
		Ecotriclopyr 3 SL	Vegetation Man., LLC	72167-49-74477	N
		Triclopyr 3 SL	Vegetation Man., LLC	72167-53-74477	N
Triclopyr +	AK, AZ, CA, CO, ID, MT, ND,	Everett	Alligare, LLC	81927-29	Y
2,4-D	NE, NM, NV, OK, SD, TX, UT,	Crossbow	Dow AgroSciences	62719-260	Y
	WA, WY				
Triclopyr +	AK, AZ, CA, CO, ID, MT, ND,	Prescott Herbicide	Alligare, LLC	81927-30	Y
Clopyralid	NE, NM, NV, OK, SD, TX, UT,	Redeem R&P	Dow AgroSciences	62719-337	Y
	WA, WY				

*** Refer to the complete label prior to considering the use of any herbicide formulation. Label changes can impact the intended use through, such things as, creation or elimination of Special Local Need (SLN) or 24 (c) registrations, changes in application sites, rates and timing of application, county restrictions, etc.**

**** Just because a herbicide has a Federal registration, and is approved under the current EIS, it may or may not be registered for use in California. This column identifies those formulations for which there is a California registration.**

APPENDIX C

EXAMPLE CALIFORNIA BLM PESTICIDE USE PROPOSAL

EXHIBIT 3
Example California BLM Herbicide Use Proposal

PROPOSAL NUMBER:
REFERENCE NUMBER:

FIELD OFFICE __________ **COUNTY** __________

LOCATION:

____

DURATION OF PROPOSAL:

____

I. HERBACIDE APPLICATION (including mixtures and surfactants):

	Trade Names	Common Names	EPA Registration No.	Manufacturer	Formulations (Liquid or Granular)	Method of Application
1						
2						
3						

MAXIMUM RATE OF APPLICATION:	
USE UNIT ON LABEL:	**POUNDS ACID EQUIVALENT/ACRE:**
1.	1.
2.	2.

INTENDED RATE OF APPLICATION:

APPLICATION DATES:

NUMBER OF APPLICATIONS:

II. PEST (List specific pest(s) and reason(s) for application):

III. MAJOR DESIRED PLANT SPECIES PRESENT:

IV. TREATMENT SITE: (Describe land type or use, size, stage of growth of target species, slope and soil type).

EXHIBIT 3 (Cont.)
Example California BLM Herbicide Use Proposal

ESTIMATED ACRES

V. SENSITIVE ASPECTS AND PRECAUTIONS: (Describe sensitive areas [e.g., marsh, endangered, threatened, candidate and sensitive species habitat] and distance to treatment site. List measures taken to avoid impact to sensitive areas).

VI. NON-TARGET VEGETATION: (Describe the impacts, cumulative impacts, and mitigations to non-target vegetation that will be lost as a result of this chemical application).

VII. INTEGRATED PEST MANAGEMENT: (Describe how this chemical application fits into your overall integrated pest management program for the treatment area.)

Originator: ______________________ Date: ____________
Company Name: ______________________
Phone: ______________________

Certified Herbicide Applicator:
______________________ Date: ____________
(Signature)

Field Office Pesticide/Noxious Weed Coordinator
______________________ Date: ____________
(Signature)

APPROVALS:
______________________________ Date: ____________
BLM Assistant Field Manager
Renewable Resources
(Signature)

APPROVALS (State Office Use Only):
______________________________ Date: ____________
BLM State Pesticide Coordinator
(Signature)

______________________________ Date: ____________
Deputy State Director, Natural Resources,
Lands and Planning
(Signature)

___ CONCUR OR APPROVED
___ NOT CONCUR OR DISAPPROVED
___ CONCUR OR APPROVED WITH MODIFICATIONS

APPENDIX D

EXAMPLE CALIFORNIA BLM PESTICIDE APPLICATION RECORDS FORM

EXHIBIT 3 (Cont.)
Example California BLM Herbicide Application Records Form

1. General Information

a. Project Name: ________________________________
b. Operator: ________________________________
c. Herbicide Use Proposal Number: ________________
d. Reference Number: ________________________

2. Name of Applicator or Employee(s) Applying the Herbicide:

____
____

3. Date(s) of Application: ________ ________ ________
(MONTH, DAY, YEAR)

4. Time Frame of Application: ______________________

5. Location of Application: T______ , R______ , and Sec. ______
County ____________________

6. Type of Equipment Used: ______________________________
____

7. Herbicide(s) Used: ______________
Company or Manufacturer's Name: ____________________
____
Trade Name: ______________________________
____

Type of Formulation: Liquid \____/ Granular \____/

8. Rate of Application Used:
a. Active Ingredient per Acre________________________
b. Volume of Formulation per Acre____________________

9. Treatment Area
a. Actual Area Treated: ____________________
b. Total Project Area: ____________________

10. Primary Pest(s) Involved: ________________________
____

11. Stage of Pest Development: ____________________
____

12. Site Treated: \____/ Native Vegetation \____/ Seeded Vegetation \____/ Other

13. Weather Conditions:
a. Wind velocity:__________ b. Wind direction __________ c. Temperature __________

14.Monitoring Record (IF INSUFFICIENT SPACE-CONTINUE ON BACK):

This record is required and must be completed, except for monitoring within 24 hours after completion of application of herbicides. This record must be maintained for minimum of 10 years.

Appendix I
Stormwater Pollution Prevention Plan (SWPPP)

[NOTE TO REVIEWER: Revised SWPPP has been submitted to BLM and is being confirmed.]

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Storm Water Pollution Prevention Plan

For:
Lucerne Solar

Prepared for: Owner / Developer
Chevron Energy Solutions Company, A Division of Chevron USA, Inc
345 California Street, 18th Floor
San Francisco, California 94104
Raphael Varieras
415-733-4735

Owner / Developer / Contractor:
Developer/General Contractor
Street Address
City, State, Zip
Contact person
Phone Number

Project Site Location/Address:
Southeast of Intersection of Santa Fe Fire Road and Foot Hill Road
Lucerne Valley, California, 92356

Contractors Storm Water Pollution Prevention Manager:
SWPPM Name
Company Name
Phone Number

SWPPP Prepared by:
Westwood Profession Services, Inc.
7699 Anagram Drive
Eden Prairie, Minnesota 55431
Aaron Mlynek, CPESC
952-697-5710

SWPPP Preparation Date: May 2010

Estimated Project Dates:
Start of Construction: 4/18/2011 **Completion of Construction:** 9/12/2011

WDID No.: ____________________________

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DRAFT

Section 100

SWPPP Certifications and Approval

100.1 SWPPP Certification by Preparer

DRAFT

Project Name: Lucerne Solar

WDID Number: ____________________

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Preparer's Signature	Date
Aaron Mlynek, CPESC Erosion Control Coordinator	**612-697-5710**
Name and Title	**Telephone Number**

Reviewer's Signature	Date
Chris Carda, PE Project Manager	
Name and Title	

100.2 Owner / Developer Approval and Certification of SWPPP

Owner / Developer
Approval and Certification of the
Storm Water Pollution Prevention Plan

Project Name: Lucerne Solar

WDID Number: ______________________

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

DRAFT

Owner / Developer Signature	**Date**
Tim Veale, Project Manager	**626-304-4710**
Owner / Developer Name and Title	**Telephone Number**

100.3 Annual Compliance Certification

By July 1 of each year, the Contractor or Owner shall complete and submit an Annual Certification of Compliance to the Colorado River Basin Regional Water Quality Control Board (RWQCB) stating compliance with the terms and conditions of the Permit and the SWPPP. The blank Annual Certification of Compliance Form is included in Attachment M. Completed Annual Certifications of Compliance and Approvals can be found in the following pages **(to be inserted by Owner / Contractor as completed).**

The contact information for the Colorado River Basin RWQCB is:
Colorado River Basin RWQCB
73-720 Fred Waring Dr., Ste.100
Palm Desert, CA 92260
(760) 346-7491

DRAFT

Section 200

SWPPP Amendments

200.1 SWPPP Amendment Certification and Approval

DRAFT

This SWPPP shall be amended:

- Whenever there is a change in construction or operations which may affect the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4); or
- If any condition of the Permits is violated or the general objective of reducing or eliminating pollutants in storm water discharges has not been achieved. If the Colorado River Basin Regional Water Quality Control Board (RWQCB) determines that a Permit violation has occurred, the SWPPP shall be amended and implemented within 14-calendar days after notification by the RWQCB;
- Annually, prior to the defined rainy season; and
- When deemed necessary by the Owner / Developer / Contractor.

The following items will be included in each amendment:

- Who requested the amendment.
- The location of proposed change.
- The reason for change.
- The original Best Management Practices (BMP) proposed, if any.
- The new BMP proposed.

The amendments for this SWPPP, along with the Owner / Developer / Contractor's Certification and the Owner / Developer / Contractor's approval, can be found in the following pages. Amendments are listed in the Amendment Log in section 200.2.

SWPPP Amendment No.

Project Name: Lucerne Solar

WDID Number:

Contractor Certification of the Storm Water Pollution Prevention Plan Amendment

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Contractor's Signature	**Date**
Contractor's Name and Title	**Telephone Number**

Owner / Developer Approval of the Storm Water Pollution Prevention Plan Amendment

"I certify under a penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Owner's Signature	**Date**
Tim Veale, Project Manager	**626-304-4710**
Name and Title	**Telephone Number**

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200.2 Amendment Log

Project Name: Lucerne Solar

WDID Number: ____________________

Amendment No.	Date	Brief Description of Amendment	Prepared by

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Section 300

Introduction and Project Description

300.1 Introduction and Project Description

The Lucerne Valley Solar Project is located in the southwestern part of San Bernardino County in the Lucerne Valley. The site is located at the foot of the San Bernardino National Forest on the western edge of the Mojave Desert. The 516-acre project is contained completely within public lands administered by the United States Department of Interior's Bureau of Land Management (BLM). Specifically, the site is located south of County Road 247 at the intersection of Santa Fe Fire Road, approximately nine miles east of the community of Lucerne Valley.

The project proposes to construct approximately 45 megawatts of electricity through the use of solar photovoltaic panels mounted on piers. This system converts solar radiation into direct current electricity. In addition to the arrays of panels, a 240 square-foot operations and maintenance building will be constructed to provide office space for maintenance staff and to house maintenance equipment. A grid of gravel access roads will be constructed as shown on the Preliminary Construction Plans to provide access to the panels.

The site will be cleared, grubbed, scarified and rough graded during initial construction activity for the project. The intent of grading operations, to minimize erosion potential is to leave the deep washed undisturbed during initial grading activity. The majority of the electrical collection system will be installed by directional boring. The existing deep washes (approximately two feet in depth and greater) will remain in place to allow the larger flows to bypass the proposed improvements. Conversely, the array piers will be constructed through existing shallow drainage paths that are less than two feet in depth to allow the existing flows to continue to fan out and flow through the site as it does under existing conditions. This study will demonstrate that the flow patterns will be maintained while the project is under operation. This minimalistic approach will ease the transition when the site returns to BLM control after the life of the project.

300.2 Unique Site Features

According to the USGS, the channels through the site (which can also be seen in the aerial photography) are classified as active wash deposits consisting of unconsolidated medium to coarse grained sand and sandy gravel with subordinate fine sand and silt. The channels are not vegetated and are characterized by active and recently active sediment accumulation with little or no soil-profile development.

The most-densely vegetated potions of the site are located east of Santa Fe Fire Road and the area and within a quarter of a mile to the west of Santa Fe Fire Road. These areas are designated as

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young alluvial fan deposits by the USGS and contain approximately thirty percent vegetation cover consisting of desert creosote bush.

The soil surface in the existing conveyances exhibits prominent bar and swale morphology and the soils consist of unconsolidated to slightly consolidated sand and gravel, poorly to moderately sorted. The braided pattern indicates that flow patterns are unstable and this area is active. The flow channels in this area are typically less than one to two feet in depth and ever-changing.

Endangered species: A comprehensive Biological Resources Assessment for the Chevron Solar Project Site in a Community of Lucerne Valley, California have been completed. The following are excerpts from that document dated 7/29/09 (pages 53- 59).

Two special status wildlife species (desert tortoise and burrowing owl) were either present on the project site during surveys conducted by Chambers Group biologists in March and April 2009, or have a moderate to high potential to occur on the project site due to habitat onsite and / or historic occurrences. Although the Mohave ground squirrel has a low potential to occur on the project site, coordination with the CDFG is recommended for trapping efforts to confirm presence / absence and /or mitigation for this species.

The proposed project will effect but not likely to adversely affect the desert tortoise. The conservation and monitoring measures outlined in the report referenced above and in the USFWS Biological Opinion shall reduce the direct and indirect impacts tot eh desert tortoise and its habitat. Authorized monitors may be present onsite throughout the CES' construction activities and these monitors shall be responsible for the safely of all wildlife species encountered within the project area.

Burrowing owl sign was detected during the protocol level focused surveys. Based on a subsequent survey conducted in June 2009, no new sign or burrowing owls were observed. Coordination with the CDFG is recommended from the report referenced above due to the presence of habitat.

SHPO / Cultural Resources: No significant cultural resources present on site which need to be protected. The cultural resources report may be obtained from the BLM; the cultural resource report is confidential information.

300.3 Construction Site Estimates

The following are estimates of the construction site:

Total site area:	509.65 acres
Disturbed site area:	136.28 acres
Percentage impervious area before construction:	0.1%
Runoff coefficient before construction (1):	0.25
Percentage impervious area after construction:	10.9%
Runoff coefficient after construction (1):	0.28
Anticipated storm water flow on to the construction site (2):	4,700 cfs

(1) Calculations are shown in Attachment D
(2) Calculations are shown in Attachment E

300.4 Projection Schedule/Water Pollution Control Schedule*

Estimated Construction Start:	April 18, 2011
Estimated Construction Finish:	September 12, 2011
Mobilization of Equipment and Materials (Lay down Area):	April 18-23, 2011
Installation of Sediment Controls:	April 25, 2011
Store Temporary Erosion and Sediment Control Materials:	April 25, 2011
Install Stabilized Entrance / Exit:	April 25, 2011
Install Non-Storm Water Controls:	April 18, 2011
Begin Road Grading Operation:	April 25, 2011
Begin Substation	May 30, 2011
Begin Utility Operations (Underground):	April 25, 2011
Begin Utility Operations (Overhead):	July 11, 2011
Begin Operation and Maintenance Building Activity:	July 11, 2011
Start Installation of Rainy Season BMPs:	November 15, 2011
Complete installation of Rainy Season BMPs:	December 1, 2011
Rainy Season:	December 2011 – March 2011
Implement Final Erosion Control of Completed Areas	August 1, 2011
File Notice of Termination with the SWQCB	August 15, 2011

***A more detailed implementation schedule shall be attached at the end of this Section (300) by the contractor.**

300.5 Contact Information/List of Responsible Parties

The Storm Water Pollution Prevention Manager (SWPPM) assigned to this project is:

Name, Title and Certifications
Phone Number
Company Name
Company Address
City, State, ZIP

The SWPPM shall have primary responsibility and significant authority for the implementation, maintenance, inspection and amendments to the approved SWPPP. The SWPPM will be available at all times throughout the duration of the project. Duties of the Owner / Developer / Contractor's SWPPM include but are not limited to:

- Ensuring full compliance with the SWPPP and the Permit
- Implementing all elements of the SWPPP, including but not limited to:

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    - Implementation of prompt and effective erosion and sediment control measures
    - Implementing all non-storm water management, and materials and waste management activities such as: monitoring discharges (dewatering, diversion devices); general site clean-up; vehicle and equipment cleaning, fueling and maintenance; spill control; ensuring that no materials other than storm water are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems; etc.
- Pre-storm inspections
- Storm event inspections
- Post-storm inspections
- Routine inspections
- Updates/Amendments to the SWPPP, as needed
- Preparing annual compliance certification for owner's, or owner's authorized representative, signature
- Ensuring elimination of all unauthorized discharges
- The SWPPM shall be assigned authority by the Contractor to mobilized crews in order to make immediate repairs to the control measures
- Coordinate with the Contractor to assure all of the necessary corrections/repairs are made immediately, and that the project complies with the SWPPP, the Permit and approved plans at all times
- Submitting Notices of Discharge and reports of Illicit Connections or Illegal Discharges

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References

The following documents are made a part of this SWPPP by reference:

- Project plans and specifications "Lucerne Solar Construction Plans", Project Number 20081195 Dated: 01/15/2010 prepared by Westwood Professional Services, Inc.
- State Water Resources Control Board (SWRCB) Order No. 99-08-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002, Waste Discharge Requirements (WDRs) for Discharges of Storm Water Runoff Associated with Construction Activity.
- California Stormwater BMP Handbook – Construction, January 2003
- California Stormwater Quality Association SWPPP Template, July 2006
- Geotechnical Investigation Report, completed by Earth Systems Southwest, Dated: 01/08/10.
- Environmental Impact Statement and Amendment to the California Desert Conservation Area Plan Lucerne Valley Solar Project San Bernardino County,

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California. Public Scoping Summary Report. October 9, 2009. Completed by Ecology and Environment, Inc.

- Weed Control Plan. Chevron Energy Solutions. Dated: January 10, 2010 (as revised).

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Section 500

Body of SWPPP

500.1 Objectives

This Storm Water Pollution Prevention Plan (SWPPP) has six main objectives:

- Identify all pollutant sources, including sources of sediment that may affect the quality of storm water discharges associated with construction activity (storm water discharges) from the construction site,
- Identify non-storm water discharges,
- Identify, construct, implement in accordance with a time schedule, and maintain Best Management Practices (BMPs) to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the construction site during construction
- Develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs),
- Identify a sampling and analysis strategy and sampling schedule for discharges from construction activity which discharge directly into water bodies listed on Attachment 3 of the Permit (Clean Water Act Section 303(d) [303(d)] Water Bodies listed for Sedimentation), and
- For all construction activity, identify a sampling and analysis strategy and sampling schedule for discharges that have been discovered through visual monitoring to be potentially contaminated by pollutants not visually detectable in the runoff.

This SWPPP conforms to the required elements of General Permit No. CAS000002 (Permit) issued by the State of California, State Water Resources Control Board (SWRCB). This SWPPP will be modified and amended to reflect any amendments to the Permit or any changes in construction or operations that may affect the discharge of pollutants from the construction site to surface waters, ground waters, or the municipal separate storm sewer system (MS4). The SWPPP will also be amended if it is in violation of any condition of the Permit or has not achieved the general objective of reducing pollutants in storm water discharges. The SWPPP shall be readily available on-site for the duration of the project.

500.2 Vicinity Map

The construction project vicinity map showing the project location, surface water boundaries, geographic features, construction site perimeter, and general topography, is located in Attachment A.

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500.3 Pollutant Source Identification and BMP selection

Refer to Attachment Section B for standard details and specifications of BMPs from California Storm Water Association Construction Handbook (http://www.cabmphandbooks.com/Construction.asp).

500.3.1 Inventory of Materials and Activities that May Pollute Storm Water

The following is a list of construction materials that will be used and activities that will be performed that will have the potential to contribute pollutants, other than sediment, to storm water runoff (control practices for each activity are identified in the Water Pollution Control Drawings (WPCDs) provided in Attachment B and/or in Sections 500.3.4 through 500.3.9:

- Vehicle fluids, including oil, grease, petroleum, and coolants
- Solvents, thinners
- Concrete curing compounds
- Cement materials including underground structures and above ground structures
- General Litter
- Base and sub-base materials
- Paints
- Solvents and Thinners
- Mortar Mix
- BMP materials
- Treated Lumber
- PCC rubble
- Landscape materials(Herbicides)

Construction activities that have the potential to contribute sediment to storm water discharges include:

- Clear and grub operations
- Grading operations
- Soil import operations
- Utility (overhead and underground operations)
- Landscaping

Attachment C lists all Best Management Practices (BMPs) that have been selected for implementation in this project. Implementation and location of BMPs are shown on the WPCDs in Attachment B. Narrative descriptions of BMPs to be used during the project are listed by category in each of the following SWPPP sections.

500.3.2 Existing (pre-construction) Control Measures

There are no pre-construction control measures anticipated at the time of SWPPP completion.

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500.3.3 Nature of Fill Material and Existing Data Describing the Soil

Fill Material:

Material imported to the site will consist of a granular "B" type II base material used to construct the access roads. This material will be compacted and poses a slight erosion risk.

Existing Soils:

Soils in the area present a moderate erosion risk as the K Factor (Soil Erodibility Factor, rock fragments free: An erodibility factor which quantifies the rock fragments free susceptibility of soil particles to detachment and movement by water. This factor is used in the Revised Universal Soil Loss Equation to calculate soil loss by water) is an average of 0.27 with a range from 0.15 to 0.43.

Soil make up varies between Gravelly Loamy Sand, Sand, Gravelly Sand, Loamy Fine Sand, Gravelly Sandy Loam and Gravelly Loam. Fine Sands and Loamy sand will be the primary concern of wind and water erosion within the project area.

The prevailing hydrologic soil group throughout the Mojave and this site is Group A. This classification is provided by the National Resource Conservation Service based on the soil's runoff potential. Group A generally consists of sandy soils with low runoff potential and high infiltration rates even when thoroughly wetted. The upstream watershed from the site includes type D soils with higher runoff potential and lower infiltration rates.

The geomorphic assessment is collaborated by the soil borings taken by Earth Systems Southwest in late 2009. According to the geotechnical assessment by Earth Systems Southwest, the site consists of a three to five foot layer of silty sand over a layer of hardened caliche. Refer to the geotechnical report in Attachment N for additional information.

There are no known past uses of the site which would contribute pollutants to the storm water discharge at the time of completion of this report.

500.3.4 Erosion Control

Erosion control, also referred to as soil stabilization, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in storm water runoff. Erosion control BMPs protects the soil surface by covering and/or binding soil particles. This project will incorporate erosion control measures required by the contract documents, and other measures elected by the Contractor, SWPPP Manager, or Owner. All temporary and permanent erosion control BMPs such as mulch, blanket and seed shall conform to the Weed Management Plan completed by Chevron dated January 10, 2010 (As Revised). This project will implement the following practices for effective temporary and final erosion control during construction:

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1) Preserve existing vegetation where required and when feasible.
2) Apply temporary erosion control to remaining active and non-active areas as required by the California Storm Water BMPs Handbook – Construction, and the contract documents. Reapply as necessary to maintain effectiveness.
3) Implement temporary erosion control measures at regular intervals throughout the defined rainy season to achieve and maintain the contract's disturbed soil area requirements. Implement erosion control prior to the defined rainy season.
4) Stabilize non-active areas as soon as feasible after the cessation of construction activities.
5) Control erosion in concentrated flow paths by applying erosion control blankets, erosion control seeding, and lining swales as required in the contract documents.
6) Apply seed to areas deemed substantially complete by the Owner during the defined rainy season.
7) At completion of construction, apply permanent erosion control measures to all remaining disturbed soil areas.

Sufficient erosion control materials will be maintained on-site to allow implementation in conformance with Permit requirement and described in this SWPPP. This includes implementation requirements for active areas and non-active areas that require deployment before the onset of rain.

Implementation and locations of temporary erosion control BMPs are shown on the Water Pollution Control Drawings (WPCDs) in Attachment B and/or described in this section. The BMP Consideration Checklist in Attachment C indicates the BMPs that will be implemented to control erosion on the Construction site; these are:

- EC-1 Scheduling
- EC-2 Preservation of Existing Vegetation
- EC-3 Hydraulic Mulch
- EC-4 Hydro seeding
- EC-5 Soil Binders
- EC-7 Geotextiles and Mats

EC-1, Scheduling

- Major grading operations are scheduled to occur during non-rainy periods.
- Erosion and sediment control practices are conducted year-round.
- Soil exposure shall be limited and staged as appropriate.
- Schedule road grading and hauling during dry periods.
- Implement temporary cover erosion practices prior to the rainy season.

EC-2, Preservation of Existing Vegetation

- Existing vegetation shall be preserved to the maximum extent practicable. Approximately 80% of the project area will be left undisturbed.

  - Minimize contractor access through communications to preserve existing vegetation outside of the road grading and lay-down areas.

EC-3, Hydraulic Mulch

  - Use of non-paper based hydraulic mulch should be used for temporary cover of exposed soils prior to significant forecasted rain events.
  - Apply hydraulic mulches to stockpiles or other exposed soils adjacent to access roads for temporary cover.
  - Allow 24 hours for drying prior to a forecasted rain event.

EC-4, Hydro seeding

  - Contractor should consult the local NRCS office for seed mixtures
  - Apply hydro seeding prior to rainy season on final graded areas
  - Hydro seeding should be used in conjunction with EC-3 for temporary cover
  - Additional applications may be necessary until adequate vegetation is established (70% density of existing vegetation is approximately 21%).

EC-5, Soil Binders

  - Soil binders may be applied to any areas that will remain disturbed for more than two weeks.
  - Soil binders shall be reapplied as needed.
  - Apply soil binders for temporary wind erosion protection
  - Apply soil binders on access roads for wind erosion protection and erosion control
  - Use of soil binder material shall be selected by the contractor for particular applications and shall meet CASQA standards and specifications.

EC-7, Geotextiles and Mats

  - Erosion control blankets may be used to stabilize areas that will remain disturbed for more than two weeks.
  - Erosion control blankets may be used in areas of concentrated flow which has been disturbed due to construction activity.
  - Erosion control blankets may be used for areas around the Arizona Crossing banks / slopes.
  - Erosion control blankets will be repaired or replaced as needed.
  - Stapling and material of blankets shall be selected by the contractor or SWPPM and applied according to CASQA standards and specifications.
  - Use of 6-mil plastic sheeting may be used for temporary cover of stock piles or spoil piles of material.

The SWPPM will implement erosion control BMPs as needed to minimize or prevent soil movement from water forces from the disturbed limits of the project. BMPs will be applied following progress of grading operations. Locations of erosion control BMPs may change as the project progresses and disturbed areas are expanded. The SWPPM will implement erosion control measures as needed before, during and after storm events.

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500.3.5 Sediment Control

Sediment controls are structural measures that are intended to complement and enhance the selected erosion control measures and reduce sediment discharges from active construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water. This project will incorporate sediment control measures required by the contract documents, and other measures selected by the Contractor, SWPPP Manager, or Owner.

Sufficient quantities of temporary sediment control materials will be maintained on-site throughout the duration of the project, to allow implementation of temporary sediment controls in the event of predicted rain, and for rapid response to failures or emergencies, in conformance with other Permit requirements and as described in this SWPPP. This includes implementation requirement for active areas and non-active areas before the onset of rain.

Implementation and locations of temporary sediment control BMPs are shown on the WPCD's in Attachment B. The BMP Consideration Checklist in Attachment C indicates all the BMPs that will be implemented to control sediment on the construction site; these are:

- SE-1 Silt fence
- SE-4 Check dams
- SE-5 Fiber Rolls

SE-1, Silt fence
- Silt fence may be used as site perimeter where conditions warrant such as around the staging / lay down area
- Silt fence could be used in areas of sheet flow to protect adjacent conveyances
- Silt fence will be repaired and replaced as needed according to findings of inspections.

SE-4, Check dams
- Check dams will generally be constructed as a pyramid of rock material in secession (three checks spaced every 100 feet) at the down gradient perimeter in concentrated flow. Specific dimension will vary per location.
- Check dams shall be installed and maintained according to CASQA specifications.

SE-5, Fiber Rolls
- Fiber Rolls may be used around temporary stockpiles for perimeter control.
- Fiber rolls may be used as perimeter control for short duration exposed / active areas in place of silt fence.
- Fiber rolls shall be installed and maintained according to CASQA specifications.

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500.3.6 Tracking Control

The following BMPs have been selected to reduce sediment tracking from the construction site onto private or public roads:

- TC-1 Stabilized construction entrance
- TC-2 Stabilized construction roadway

TC-1, Stabilized construction entrance
  - A stabilized construction entrance will be installed where pavement ends to minimize tracking.
  - Gravel/rock of ± 2 inches placed to a depth of 12 inches shall be used for stabilized entrance. Specific dimension will vary per location.
  - Gravel/rock will be cleaned and maintained as needed.

TC-2, Stabilized construction roadway
  - A stabilized construction roadway will be used for access and hauling
  - Use of WE-1 or EC-5 will likely be needed to minimize wind erosion
  - Minimize traffic speed to prevent excess dust generation along roads

The SWPPM shall construct stabilized construction entrances / exits for the project site as shown on the attached erosion control plan. Stabilized constructed roadways will be implemented by the SWPPM as necessary to minimize potential of dust and erosion of exposed soils during construction.

500.3.7 Wind Erosion Control

The following BMPs have been selected to control dust from the construction site:

- WE-1 Wind erosion control
- EC-5 Soil Binders

WE-1, Wind erosion control
  - Potable water will be applied to disturbed soil areas of the project to control dust and maintain moisture levels for compaction.
  - Water will be applied by water trucks as needed. Water application rates will be concentrated during the summer and fall months.
  - Water conservation practices will be used in conjunction with dust control measures to prevent discharges associated with dust control applications.
  - Plastic covers shall be used to prevent dispersal of sediment from stockpiles as necessary.

EC-5, Soil Binders
  - Soil binders may be applied to any areas that will remain disturbed for more than two weeks.

- Soil binders shall be reapplied as needed.
- Apply soil binders for temporary wind erosion protection
- Apply soil binders on access roads for wind erosion protection and erosion control
- Use of soil binder material shall be selected by the contractor for particular applications and shall meet CASQA standards and specifications.

Application of water shall be used to minimize dust generation from wind erosion forces. During windy conditions (forecasted and / or actual conditions of 25 mph or greater) wind erosion control shall be applied at intervals sufficient enough to adequately control wind erosion. Additionally, vehicle traffic speed limits should be kept low to minimize dust generation; application of dust palliatives to haul roads or access roads shall be implemented at intervals sufficient enough to minimize dust generation from vehicle traffic.

500.3.8 Non-Storm Water Control

An inventory of construction activities and potential non-storm water discharges is provided in Section 500.3.1. The BMP Consideration Checklist in Attachment C and the following list indicates the BMPs that have been selected to control non-storm water pollution on the construction site. Implementation and locations of some non-storm water control BMPs are shown on the Water Pollution Control Drawings (WPCDs) in Attachment B. A narrative description of each BMP follows.

- NS-1 Water Conservation Practices
- NS-6 Illicit Connection / Illegal Discharge Detection and Reporting
- NS-9 Vehicle and equipment fueling
- NS-10 Vehicle and equipment maintenance
- NS-12 Concrete Curing
- NS-13 Concrete Finishing

NS-1, Water Conservation Practices
- Use of water for dust or other uses shall be conserved.
- Maintain all equipment and vehicles to prevent leaks
- Observe application for any runoff and implement appropriate erosion and sediment controls to prevent sediment discharge off site.

NS-6, Illicit Connection / Illegal Discharge Detection and Reporting
- Contractor shall review SWPPP prior to construction
- SWPPM shall inspect site for presence of illegal discharges or existing contamination / dumping prior to construction starting.
- Observe perimeters of project for any potential illegal discharges or dumping which may enter the site area.

NS-9, Vehicle and equipment fueling

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- Vehicle and equipment fueling will occur off-site.
- If impractical to send equipment off-site, fueling will only take place in designated areas via fueling truck.
- Leaks and spills will be cleaned up daily.
- Drip pans or absorbent pads shall be used during fueling.

NS-10, Vehicle and equipment maintenance

- Drip pans or absorbent pads shall be used during maintenance work that involves fluids.
- Dedicated maintenance areas will be located 50 feet from downstream drainage facilities and water courses.
- Used oils, fluids, lubricants, and spill cleanup material will be disposed of properly.
- Oil and chemicals will be stored in secondary containment.

NS-12, Concrete Curing

- Use proper storage and handling of material on site.
- Avoid over spraying of material
- Avoid drift of material by applying close to concrete surface

NS-13, Concrete Finishing

- Use proper storage and handling of material on site.
- Avoid over spraying of material
- Avoid drift of material by applying close to concrete surface
- Refer to WM-6 and WM-8

500.3.9 Waste Management and Materials Pollution Control

An inventory of construction activities, materials, and wastes is provided in Section 500.3.1. The BMP Consideration Checklist in Attachment C and the following list indicates the BMPs that have been selected to handle materials and control construction site wastes. A narrative description of each BMP follows.

- WM-1 Material delivery and storage
- WM-2 Material use
- WM-3 Stockpile management
- WM-4 Spill prevention and control
- WM-5 Solid waste management
- WM-6 Hazardous Waste Management
- WM-8 Concrete waste management
- WM-9 Sanitary/Septic waste management
- WM-10 Liquid Waste Management

WM-1, Material delivery and storage

- Materials will be stored in a water tight secondary containment protected from rain.

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- Materials will be stored with sufficient separation to allow for spill cleanup and emergency response access.
- Incompatible materials shall not be stored together.
- Materials shall be stored in their original containers with labels kept legible. Illegible labels shall be replaced.
- Bagged and boxed materials shall be stored on pallets and not be allowed to accumulate on the ground, and will be covered with plastic to be protected from rain and wind during the rainy season.
- Material inventory stored on-site will be minimized.

WM-2, Material use

- Less hazardous, alternative materials will be utilized as often as possible.
- Use of hazardous materials on-site will be minimized.
- Manufacturers' directions will be followed for the uses of materials.
- Employees shall be trained in proper material usage.

WM-3, Stockpile management

- Bagged material shall be placed on pallets and covered.
- Stockpiles shall be placed away from drainage courses, concentrated flows of storm water, and inlets.
- Stockpiles shall be covered prior to the onset of precipitation or wind.

WM-4, Spill prevention and control

- Spills shall not be buried or washed with water.
- Proper storage, clean-up and spill reporting instructions for hazardous materials stored or used on the project site shall be posted at all times in an open, conspicuous and accessible location.
- Used cleanup materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose shall be stored and disposed of properly.

WM-5, Solid waste management

- The production of solid waste materials will be minimized when possible.
- Littering shall be prohibited by employees, subcontractors, and visitors.
- Litter and debris shall be disposed of properly.

WM-6, Hazardous Waste Management

- The production of hazardous waste materials will be minimized when possible.
- Train contractors in handling, storage and transport of hazardous waste.
- Storage of all material shall be in original, labeled containers.

WM-8, Concrete waste management

- Concrete trucks shall washout in designated washout pits.
- Concrete shall not be washed out on ground.

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- Broken concrete piles shall be disposed of properly within 48 hours of removal, or covered with plastic, on plastic prior to the onset of precipitation.

WM-9, Sanitary/Septic waste management
- Temporary sanitary facilities shall be stored away from drainage channels, inlets, and from traffic circulation.
- Wastewater shall not be disposed of on-site, and shall be disposed of properly.
- Sanitary/septic facilities shall be maintained in good working order.

WM-10, Liquid Waste Management
- Train and instruct contractors to control liquid wastes such as concrete washout, bentonite and other waste liquids.
- Contain bentonite slurry from directional boring and cleanup and remove material from the site for proper disposal.
- See WM-6 for disposal of wastes.

Construction materials and stockpiles of material shall be stored in areas away from storm water drainage or conveyance areas.

Stockpiles of soil and fill material shall be located within sediment barriers as described in Section 500.3.5.

Contractors and subcontractors are to prevent spills from occurring by following WM-4; should spills or leaks occur the incident should be reported immediately to the SWPPM so the material can be contained, cleaned up and properly documented.

Solid wastes shall be disposed of properly by designating a waste collection area and BMP such as dumpsters. The dumpsters shall be used throughout the site and located away from drainage areas and have adequate cover and containment if material in the dumpster could be a stormwater pollutant.

The SWPPM shall provide convenient, well maintained temporary sanitary facilities for use by all personnel during working hours. Maintenance of the facilities shall be arranged with a septic waste service provider. Temporary sanitary facilities shall be located away from drainage ways and stormwater conveyances.

Contaminated soils are not believed to be present within the site area; should contaminated soils be discovered the material must be isolated and protected from stormwater contact and hauled off site for disposal or treatment by a licensed hazardous waste hauler.

500.4 Water Pollution Control Drawings (WPCDs)

The Water Pollution Control Drawings can be found in Attachment B of the SWPPP.

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500.5 Construction BMP Maintenance, Inspection, and Repair

Inspections will be conducted as follows:

- Within 24 hours prior to a forecast storm
- Within 24 hours after a storm event that causes runoff from the construction site
- Every 24 hours during extended rain events

Completed inspection checklists will be kept with the SWPPP and available on site at all times.

A tracking or follow-up procedure shall follow any inspection that identifies deficiencies is BMPs. A program for Maintenance, Inspection and Repair of BMPs is shown in Attachment G.

During an inspection the qualified inspector must identify BMP effectiveness and implement repairs or design changes as soon as field conditions allow safe access. Equipment, materials and workers must be available for rapid response to failures and emergencies. Each inspection should also include:

- Inspection date
- Weather information with estimate of beginning of storm event, duration of event, time elapsed since last storm and approximate total rainfall amounts
- Description of inadequate BMPs
- If safe access during storm events is possible observations of all BMPs or following a storm event a visual inspection at the relevant outfall, discharge point or downstream location and required maintenance activities is needed.
- Corrective actions required including any changes to the SWPP and implementation dates for such actions
- Inspectors name, title and signature.

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500.6 Post-Construction Storm Water Management

500.6.1 Post-Construction Control Practices

Post construction control practices include stabilization of disturbed areas to 70% vegetated cover from preconstruction native background vegetated condition for areas which are not utilized as access roads or permanent parking / building uses. It is estimated the native preconstruction vegetated cover is 30%. 70% of 30% = (0.70 x 0.30) 0.21 or 21%. The site shall be considered stabilized once all soil disturbing activities are completed and either of the two following criteria is met:

1. Re-establishment of 21% uniform vegetative cover, OR
2. Equivalent stabilization measures have been employed such as blankets, soil cement, fiber matrices, geotextiles or other erosion resistant soil coverings or treatment.

No permanent stormwater control practices are planned as runoff should be infiltrated into the pervious soil areas.

500.6.2 Operation/Maintenance after Project Completion

Post construction BMPs above (permanent vegetated cover and access roads) will be funded and maintained by Chevron Energy Solutions Company.

500.7 Training

Section 300.5 shows the name of the Contractor's Storm Water Pollution Prevention Manager (SWPPM). Training documentation can be found in Attachment I **(SWPPM shall insert training documentation)**

This SWPPP was prepared by Westwood Professional Services, Inc under supervision of Aaron Mlynek, CPESC (#3344) and Chris Carda, PE a registered civil engineer in California (License # 75322).

500.8 List of Subcontractors

All contractors and subcontractors will be notified of the requirement for storm water management measures during the project. **A list of contractors / subcontractors will be maintained and included in the SWPPP by the SWPPM.** If subcontractors change during the project, the list will be updated accordingly. The subcontractor notification letter and log is included in the SWPPP as Attachment J.

500.9 Other Plans/Permits

Other plans and permits can be found in Attachment N (as applicable).

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Section 600

Monitoring Program and Reports

600.1 Site Inspections

The SWPPM will inspect the site prior to a forecast storm, after a rain event that causes runoff from the construction site, at 24-hour intervals during extended rain events in addition to conducting an inspection once every month. The results of all inspections and assessments will be documented and a copy of inspections shall be provided to the Owner / Developer / Contractor within 24 hours. Copies of the completed inspection checklists will be maintained with the SWPPP on site. Site inspections conducted for monitoring purposes will be performed using the inspection checklist included in Attachment H.

The name and contact number of the assigned inspection personnel are listed below:

Assigned inspector / SWPPM:______________Contact phone: ____________________

600.2 Non-Compliance Reporting

If a contaminated discharge occurs or if the project receives a written notice of non-compliance, the Contractor will immediately notify the Owner / Developer and will file a written report to the owner / developer within 7 days of the discharge or notice. The Owner is responsible for filing a written report to the Colorado River Basin Regional Water Quality Control Board (RWQCB) within 30 days of identification of non-compliance. Corrective measures will be implemented immediately following the discharge, notice or order. A sample Notice of Non-Compliance (NONC form is provided in Attachment K. All discharges will be documented on a Discharge Reporting Log using the example form in Attachment R.

The report to the Owner and to the Colorado River Basin RWQCB will contain the following items:

- The date, time, location, nature of operation, and type of unauthorized discharge, including the cause or nature of the notice or order,
- The control measures (BMPs) deployed before the discharge event, or prior to receiving notice or order,
- The date of deployment and type of control measures (BMPs) deployed after the discharge event, or after receiving the notice or order, including additional measures installed or planned to reduce or prevent re-occurrence, and
- An implementation and maintenance schedule for any affected BMPs

600.3 Record Keeping and Reports

Records shall be retained for a minimum of three years for the following items:

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- Site inspections
- Compliance certifications
- Discharge reports
- Approved SWPPP document and amendments
- Sampling records, forms and logs

600.4 Sampling and Analysis Plan for Sediment

This project does not have the potential to discharge directly to a water body listed as impaired due to Sedimentation/Siltation and/or Turbidity pursuant to Clean Water Act, Section 303(d).

600.5 Sampling and Analysis Plan for Non-Visible Pollutants

This Sampling and Analysis Plan (SAP) for Non-Visible Pollutants describes the sampling and analysis strategy and schedule for monitoring non visible pollutants in storm water discharges from the project site and off-site activities directly related to the project, in accordance with the requirements of Section B of the General Permit, including SWRCB Resolution 2001-046.

600.5.1 Scope of Monitoring Activities

The following is a list of construction materials, wastes or activities, as identified in Section 500.3.1, that are potential sources of non-visible pollutants to storm water discharges from the project. Storage, use, and operational locations are shown on the WPCDs in Attachment B.

- Vehicle fluids, including oil, grease, petroleum, and coolants
- Solvents, thinners
- Concrete curing compounds
- Cement materials including underground structures and above ground structures
- General Litter
- Base and sub base materials
- Paints
- Solvents and Thinners
- Mortar Mix
- BMP materials
- Treated Lumber
- PCC rubble
- Landscape materials (Herbicides)

Sampling for non-visible pollutants will be conducted when (1) a breach, leakage, malfunction, or spill is observed; and (2) the leak or spill has not been cleaned up prior to the rain event; and (3) there is the potential for discharge of non-visible pollutants to surface waters or drainage system.

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600.5.2 Monitoring Strategy

Sampling Schedule

Samples for the applicable non-visible pollutant(s) and a sufficiently large uncontaminated background sample shall be collected during the first two hours of discharge from rain events that result in a sufficient discharge for sample collection. Samples shall be collected during daylight hours (sunrise to sunset) and shall be collected regardless of the time of year, status of the construction site, or day of the week.

In conformance with the U.S. Environmental Protection Agency definition, a minimum of 72 hours of dry weather will be used to distinguish between separate rain events.

Collection of discharge samples for non-visible pollutant monitoring will be triggered when any of the following conditions are observed during the required inspections conducted before or during rain events:

- Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a water tight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents storm water contact and runoff from the storage area.
- Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the rain event, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm sewer system.
- An operational activity, including but not limited to those in Section 600.5.1, with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the rain event, (2) applicable BMPs were observed to be breached, malfunctioning, or improperly implemented, and (3) there is the potential for discharge of non visible pollutants to surface waters or a storm sewer system.
- Soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and there is the potential for discharge of non-visible pollutants to surface waters or a storm sewer system.
- Storm water runoff from an area contaminated by historical usage of the site has been observed to combine with storm water runoff from the site, and there is the potential for discharge of non-visible pollutants to surface waters or a storm sewer system.

Sampling Locations

Sampling locations are based on proximity to planned non-visible pollutant storage, occurrence or use; accessibility for sampling, personnel safety; and other factors in accordance with the applicable requirements in the Permit. Planned sampling locations are shown on the WPCDs in Attachment B at discharge points.

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A sampling location has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with samples being analyzed for non-visible pollutants. This location was selected such that the sample will not have come in contact with operational or storage areas associated with the materials, wastes, and activities identified in Section 500.3.1 or areas of disturbed soil / construction activity. This sampling location is denoted as "Sample Area A" or "SA-A". A sample location from lay-down area where potential storage or placement of materials may be present is labeled as "Sample Area – B" or "SA-B" which is located east of Santa Fe Fire Road.

If an operation activity or storm water inspection conducted 24 hours prior to or during a rain event identifies the presence of a material storage, waste storage, or operations area with spills or the potential for the discharge of non-visible pollutants to surface waters or a storm sewer system that was an unplanned location and has not been identified on the WPCDs, sampling locations will be selected using the same rationale as that used to identify planned locations.

600.5.3 Monitoring Preparation

Samples on the project will be collected by the following Contractor personnel:

Company Name: ____________________

Personnel Name: ____________________

Contact Telephone Number: ____________________

Alternate Personnel Name: ____________________

Alternate Telephone Number: ____________________

Samples on the project site will be collected by the following certified lab:

Lab Name: ____________________

Street address: ____________________

City, state, zip: ____________________

Phone number: ____________________

The SWPPM and / or Contractor conducting the sampling will contact LAB NAME prior to the possible sampling with adequate time to ensure sampling equipment and materials are available and to collect samples, if required.

600.5.4 Analytical Constituents

Identification of Non-Visible Pollutants

The following is a list of possible non-visible pollutants. The table in Attachment Q provides the constituents associated with each non-visible pollutant.

- Vehicle fluids, including oil, grease, petroleum, and coolants
- Solvents, thinners
- Concrete curing compounds
- Cement materials including underground structures and above ground structures
- General Litter
- Base and sub base materials
- Paints
- Solvents and Thinners
- Mortar Mix
- BMP materials
- Treated Lumber
- PCC rubble
- Landscape materials (Herbicides)

600.5.5 Sample Collection and Handling

Sample Collection Procedures

Samples of discharge will be collected at the designated sampling locations shown on the WPCDs for observed breaches, malfunction, leakages, spills, operational areas, soil amendment application areas, and historical site usage areas that triggered the sampling event.

Grab samples will be collected and preserved in accordance with the methods identified below. Only personnel trained in proper water quality sampling will collect samples.

Sampling will be collected by placing a separate lab-provided sample container directly into a stream of water down gradient and within close proximity to the potential non-visible pollutant discharge location. This separate lab-provided sample container will be used to collect water, which will be transferred to sample bottles for laboratory analysis. The up gradient and uncontaminated background samples shall be collected first, prior to collecting the down gradient to minimize cross-contamination. The sampling personnel will collect the water up gradient of where they are standing. Once the separate lab-provided sample container is filled, the water sample will be poured directly into sample bottles provided by the laboratory for analysis.

To maintain sample integrity and prevent cross-contamination, sampling collection personnel will:

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- Wear a clean pair of surgical gloves prior to the collection and handling of each sample at each location.
- Not contaminate the inside of the sample bottle by not allowing it to come into contact with any material other than the water sample.
- Discard sample bottles or sample lids that have been dropped onto the ground prior to sample collection.
- Not leave the cooler lit open for extended periods of time once samples are placed inside.
- Not sample near a running vehicle where exhaust fumes may impact the sample.
- Not touch the exposed end of a sampling tube, if applicable.
- Avoid allowing rainwater to drip from rain gear or other surfaces into sample bottles.
- Not eat, smoke, or drink during sample collection.
- Not sneeze or cough in the direction of an open sample bottle.
- Minimize the exposure of the samples to direct sunlight, as sunlight may cause biochemical transformation of the sample to take place.
- Decontaminate sampling equipment prior to sample collection using a TSP-soapy water wash, distilled water rinse, and final rinse with distilled water.
- Dispose of decontamination water/soaps appropriately; i.e., not discharge to the storm drain system or receiving water.

Sample Handling Procedures

Immediately following collection, sample bottles for laboratory analytical testing will be capped, labeled, documented on a Chain of Custody (COC) form provided by the analytical laboratory, sealed in a re-sealable plastic storage bag, placed in an ice-chilled cooler, at as near to 4 degrees Celsius as practicable, and delivered within 24 hours to the following California state-certified laboratory:

Lab Name: ____________________

Street address: ____________________

City, state, zip: ____________________

Phone number: ____________________

Immediately following collection, samples for field analysis will be tested in accordance with the field instrument manufacturer's instructions and results recorded on the Sampling Activity Log.

Sample Documentation Procedures

Data documented on the sample bottle identification labels, chain of custody forms, sampling activity logs and inspection checklists should be recorded with waterproof ink. Samples will be labeled with the date, time, location, and job name. Duplicate samples will

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be specified as duplicate sample. Sampling activity logs, which is located in Attachment P, will be filled out during the sampling activity and placed in the SWPPP after the sampling event. In the event of erroneous information recorded, the information shall be redlined and the correct information shall be noted on the same form; the original erroneous information should still be readable. Date and initial any changes or updates on sampling forms, logs and checklists. The contractor or SWPPM should insert copies of the Chain of Custody forms in Attachment P from the approved lab once known. Any maintenance and calibration records will be maintained with the SWPPP and sampling records.

Sample Bottle Identification Labels

Sampling personnel will attach an identification lable to each sample bottle. The following information will be recorded on the label.

- Project Name
- Project Number
- Sample Identification Number and location [Date of Sample – Location] (example: 03/16/2010 – SA-A).
- Quality assurance / quality control (QA / QC) samples shall be identified similarly using a unique sample number or designation as above.
- Collection date and time
- Analysis constituent

Sampling Activity Logs

Activity logs for sampling events should identify the following items.

- Sampling Date
- Separate times for collected samples and QA / QC samples
- Unique sample identification number and location
- Analysis constituent
- Names of sampling personnel
- Weather conditions
- Precipitation Amount
- Field analysis results
- Other / Notes regarding special circumstances or details

Chain of Custody (COC)Forms

All samples to be analyzed by the listed laboratory in this SWPPP will be accompanied by a COC form provided by the laboratory. Only the sample collectors will sign the COC form over to the lab. COC procedures will be strictly followed for AQ / AC assurance.

Storm Water Quality Construction Inspection Checklists

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When applicable, the SWPPM will document on the checklist when sampling was conducted for non-visible pollutants during or after a rain event.

600.5.6 Sample Analysis

Samples shall be analyzed for applicable constituents based on the possible non-visible pollutants assessed in the pre-storm inspection. The Pollutant Testing Guidance Table is located in Attachment Q. For samples collected for field analysis, collection, analysis and equipment calibration will be in accordance with the field instrument manufacturer's specifications.

As applicable, the following field instrument(s) will be used for the respective constituents:

***Field Instrument**	**Constituent**

* Instrument(s) will be maintained in accordance with manufacturer's instructions, calibrated before each sampling and analysis event.

600.5.7 Quality Assurance/Quality Control

One duplicate sample will be taken during each sampling event. The duplicate samples will be collected, handled, and analyzed the same as all other samples collected. The duplicate samples will be taken immediately after each primary sample has been collected and shall be collected where contamination is likely, not in the background sample. Duplicate samples shall only be used as a check on laboratory quality assurance.

600.5.8 Data Management and Reporting

A copy of all water quality analytical results and QA/QC data will be included in the onsite SWPPP within 5 days of sampling (for field analyses, if any) and within 30 days of sampling (for laboratory analyses).

Lab reports and COCs will be reviewed for consistency between lab methods, sample identifications, dates, and times for both primary samples and QA/QC samples. All data, including COC forms and Sampling Activity Logs, shall be kept with the SWPPP.

600.5.9 Data Evaluation

An evaluation of the water quality sample analytical results, including figures with sample locations, the water quality analytical results, and the QA/QC data for every event that samples are collected, will be included in the on-site SWPPP. Should the downstream

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sample concentrations exceed the upstream sample concentrations, the Storm Water Pollution Prevention manager or other personnel will evaluate the BMPs, site conditions, surrounding influences (including the run-on sample analysis), and other site factors to determine the probable cause for the increase.

As determined by the data and project evaluation, appropriate BMPs will be repaired or modified to mitigate increases in sediment concentrations in the water body. Any revisions to the BMPs will be recorded as an amendment to the SWPPP

600.5.10 Change of Conditions

Whenever SWPPP monitoring, pursuant to Section B of the General Permit, indicates a change in site conditions that might affect the appropriateness of sampling locations, testing protocols will be revised accordingly. All such revisions will be recorded as amendments to the SWPPP.

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Attachment A

Vicinity Map

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Attachment B

Water Pollution Control Drawings (WPCDs)

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Attachment C

BMP Checklist

CONSTRUCTION SITE BMP CHECKLIST

The BMPs listed here should be considered for every project. Those BMPs that are not included in the SWPPP must be checked as "Not Used" with a brief statement describing why it is not being used.

EROSION CONTROL BMPs

BMP No.	BMP	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
EC-1	Scheduling	X		
EC-2	Preservation of Existing Vegetation	X		
EC-3	Hydraulic Mulch	X		
EC-4	Hydroseeding	X		
EC-5	Soil Binders	X		
EC-6	Straw Mulch		X	Sandy soils limit effectiveness of crimping
EC-7	Geotextiles & Mats	X		
EC-8	Wood Mulching		X	Not suitable for concentrated flow and need to remove post construction
EC-9	Earth Dikes & Drainage Swales		X	Soils not conducive for dike construction and stability
EC-10	Velocity Dissipation Devices		X	No outlets / stormwater infrastructure
EC-11	Slope Drains		X	No steep slopes / cut and fill areas w/in project area
EC-12	Streambank Stabilization		X	No defined stream channel work or riparian areas
EC-13	Polyacrylamide		X	Do not want to increase potential of non-visible pollutants

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CONSTRUCTION SITE BMPs
CONSIDERATION CHECKLIST

The BMPs listed here should be considered for every project. Those BMPs that are not included in the SWPPP must be checked as "Not Used" with a brief statement describing why it is not being used.

BMP No.	BMP	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
SEDIMENT CONTROL BMPs				
SE-1	Silt Fence	X		
SE-2	Sediment Basin		X	Arid environment and minimal or sporadic disturbed areas
SE-3	Sediment Trap		X	Watershed exceeds 5 acres
SE-4	Check Dam	X		
SE-5	Fiber Rolls	X		
SE-6	Gravel Bag Berm		X	Silt fence and fiber logs used instead
SE-7	Street Sweeping and Vacuuming		X	No paved surfaces
SE-8	Sand Bag Barrier		X	Silt fence and fiber logs used instead
SE-9	Straw Bale Barrier		X	Silt fence and fiber logs used instead
SE-10	Storm Drain Inlet Protection		X	No stormwater inlets within or adjacent to project area
SE-11	Chemical Treatment		X	Arid Environment
WIND EROSION CONTROL BMPs				
WE-1	Wind Erosion Control	X		
TRACKING CONTROL BMPs				
TR-1	Stabilized Construction Entrance/Exit	X		
TR-2	Stabilized Construction Roadway	X		
TR-3	Entrance/Outlet Tire Wash		X	Arid Environment / Not applicable to project

CONSTRUCTION SITE BMPs CONSIDERATION CHECKLIST

The BMPs listed here should be considered for every project. Those BMPs that are not included in the SWPPP must be checked as "Not Used" with a brief statement describing why it is not being used.

NON-STORM WATER MANAGEMENT BMPs

BMP No.	BMP	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
NS-1	Water Conservation Practices	X		
NS-2	Dewatering Operations		X	Arid Environment
NS-3	Paving and Grinding Operations		X	No paving / grinding activity planned
NS-4	Temporary Stream Crossing		X	No stream crossings anticipated
NS-5	Clear Water Diversion		X	No diversion needed / Not applicable to project
NS-6	Illicit Connection/ Discharge	X		
NS-7	Potable Water/Irrigation		X	No water utilities or irrigation planned
NS-8	Vehicle and Equipment Cleaning		X	Cleaning will take place off site
NS-9	Vehicle and Equipment Fueling	X		
NS-10	Vehicle and Equipment Maintenance	X		
NS-11	Pile Driving Operations		X	Pile driving operations not near water or ground water
NS-12	Concrete Curing	X		
NS-13	Concrete Finishing	X		
NS-14	Material and Equipment Use Over Water		X	Arid Environment
NS-15	Demolition Adjacent to Water		X	No Demolition anticipated / Arid Environment
NS-16	Temporary Batch Plants		X	No onsite batch plant planned

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CONSTRUCTION SITE BMPs
CONSIDERATION CHECKLIST

The BMPs listed here should be considered for every project. Those BMPs that are not included in the SWPPP must be checked as "Not Used" with a brief statement describing why it is not being used.

WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs

BMP No.	BMP	CHECK IF USED	CHECK IF NOT USED	IF NOT USED, STATE REASON
WM-1	Material Delivery and Storage	X		
WM-2	Material Use	X		
WM-3	Stockpile Management	X		
WM-4	Spill Prevention and Control	X		
WM-5	Solid Waste Management	X		
WM-6	Hazardous Waste Management	X		
WM-7	Contaminated Soil Management		X	No known contamination present on site
WM-8	Concrete Waste Management	X		
WM-9	Sanitary/Septic Waste Management	X		
WM-10	Liquid Waste Management	X		

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Attachment D

Computation Sheet for Determining Runoff Coefficients

Total Site Area = 516 Acres (A)

Existing Site Conditions

Impervious Site Area [1] = 0 Acres (B)

Impervious Site Area Runoff Coefficient [2, 4] = 0.75 (C)

Pervious Site Area [3] = 516 Acres (D)

Pervious Site Area Runoff Coefficient [4] = 0.25 (E)

Existing Site Area Runoff Coefficient $\frac{(B \times C) + (D \times E)}{(A)}$ = 0.25 (F)

Proposed Site Conditions (after construction)

Impervious Site Area [1] = 32 Acres (G)

Impervious Site Area Runoff Coefficient [2, 4] = 0.75 (H)

Pervious Site Area [3] = 484 Acres (I)

Pervious Site Area Runoff Coefficient [4] = 0.25 (J)

Proposed Site Area Runoff Coefficient $\frac{(G \times H) + (I \times J)}{(A)}$ = 0.28 (K)

1. Includes paved areas, areas covered by buildings, and other impervious surfaces.
2. Use 0.95 unless lower or higher runoff coefficient can be verified.
3. Includes areas of vegetation, most unpaved or uncovered soil surfaces, and other pervious areas.
4. Refer to local Hydrology Manual for typical C values.

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Attachment E

Computational Sheet for Determining Run-on Discharges

Existing Site Conditions

Area Runoff Coefficient = 0.28 (A)

Area Rainfall Intensity = 10 yr / 24 hr (B)

Drainage Area = 8,900 Acres (C)

Site Area Run-on Discharge (A) x (B) x (C) = 4,700 CFS* (D)

*Run-on discharge based on 10-year rainfall event utilizing SCS unit hydrograph method for 8,900 acre area.

The total flow is dispersed between multiple channels and not a single point source of discharge.

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Attachment F

Notice of Intent (NOI)

Attachment G

Program for Maintenance, Inspection, and Repair of Construction Site BMPs

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The contractor shall use the following guidelines for maintenance, inspection, and repair of BMPs identified in the SWPPP		
BEST MANAGEMENT PRACTICES (BMPs)	**INSPECTION FREQUENCY (all controls)**	**MAINTENANCE/REPAIR PROGRAM**
TEMPORARY EROSION CONTROL BMPs		
EC-1, Scheduling	Monthly Pre, post and interim Storm events	■ Review project schedule. Amend to show updated information or changes from weather, contractors or progress.
EC-2, Preservation of Existing Vegetation	Monthly Pre, post and interim Storm events	■ Repair or replace damaged vegetation
EC-3, Hydraulic Mulch	Monthly Pre, post and interim Storm events	■ Reapply as necessary; spray from two different angles to minimize 'shadowing'
EC-4, Hydroseed	Monthly Pre, post and interim Storm events	■ Reapply as necessary; observe for vegetation establishment. Multiple applications may be needed.
EC-5, Soil Binders	Monthly Pre, post and interim Storm events	■ Reapply as needed ■ Reapply prior to storm event
EC-7, Geotextiles and Mats	Monthly Pre, post and interim Storm events	■ Replace or repair as needed ■ Insure preparation of soil is adequate and stapling pattern is sufficient.
TEMPORARY SEDIMENT CONTROL BMPs		
SE-1, Silt Fence	Monthly Pre, post and interim Storm events	■ Repair or replace as needed ■ Repair and cleanout or replace prior to storm event
SE-4, Check Dam	Monthly Pre, post and interim Storm events	■ Repair washouts along sides and extend to ensure water flows over top of check ■ Repair or cleanout sediment prior to storm events
SE-5, Fiber Rolls	Monthly Pre, post and interim Storm events	■ Repair or replace as needed ■ Repair, cleanout or replace prior to storm event
WIND EROSION CONTROL BMPs		
WE-1, Wind Erosion Control	Monthly Pre, post and interim Storm events	■ Check applicable areas to ensure proper coverage; reapply as needed
TRACKING CONTROL BMPs		
TR-1, Stabilized Construction Entrance/Exit	Monthly Pre, post and interim Storm events	■ Clean or replace or top dress as needed ■ Clean or replace prior to storm event

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The contractor shall use the following guidelines for maintenance, inspection, and repair of BMPs identified in the SWPPP

BEST MANAGEMENT PRACTICES (BMPs)	INSPECTION FREQUENCY (all controls)	MAINTENANCE/REPAIR PROGRAM
TR-2, Stabilized Construction Roadway	Monthly Pre, post and interim Storm events	■ Clean, replace or top dress as needed
NON-STORM WATER MANAGEMENT BMPs		
NS-1, Water Conservation Practices	Monthly Pre, post and interim Storm events	■ Keep watering equipment in good condition
NS-6, Illicit Connection/ Discharge	Preconstruction, Monthly and Pre, post and interim storm events	■ Contain any material present ■ Remove and properly dispose of material
NS-9, Vehicle and Equipment Fueling NS-10, Vehicle and Equipment Maintenance	Monthly Pre, post and interim Storm events	■ Observe daily for leaks and spill during activity ■ Keep cleanup materials near designated areas ■ Remove vehicles in which leaks cannot be repaired ■ Replace drip pans or plastic as needed
NS-12, Concrete Curing NS-13, Concrete Finishing	Monthly Pre, post and interim Storm events	■ Observe daily for leaks, spills and containment during activity ■ Keep cleanup materials near activity ■ Contain, cleanup and properly dispose of material regularly /as needed
WASTE MANAGEMENT AND MATERIALS POLLUTION CONTROL BMPs		
WM-1, Material Delivery and Storage	Monthly Pre, post and interim Storm events	■ Repair or replace storage area as needed ■ Keep containment area free of water and spills
WM-2, Material Use	Monthly Pre, post and interim Storm events	■ Spot check employees' material usage
WM-3, Stockpile Management	Monthly Pre, post and interim Storm events	■ Repair or replace as needed ■ Repair or replace prior to storm
WM-4, Spill Prevention and Control	Monthly Pre, post and interim Storm events	■ Verify spill cleanup materials are located near storage areas and delivery locations
WM-5, Solid Waste Management	Monthly Pre, post and interim Storm events	■ Remove waste when containers are full ■ Train employees on proper disposal of litter
WM-6, Hazardous Waste Management	Monthly Pre, post and interim Storm events	■ Regularly collect material for disposal and removal from site ■ Verify spill cleanup material is nearby and in stock
WM-8, Concrete Waste Management	Monthly Pre, post and interim Storm events	■ Replace concrete washout pits as needed ■ Dispose of waste properly

The contractor shall use the following guidelines for maintenance, inspection, and repair of BMPs identified in the SWPPP

BEST MANAGEMENT PRACTICES (BMPs)	INSPECTION FREQUENCY (all controls)	MAINTENANCE/REPAIR PROGRAM
WM-9, Sanitary/Septic Waste Management	Monthly Pre, post and interim Storm events	■ Pick up and dispose of sanitary waste spills promptly ■ Regularly maintain facility with certified contractor
WM-10, Liquid Waste Management	Monthly Pre, post and interim Storm events	■ Observe activity and presence of controls daily during activity ■ Repair BMPs as needed ■ Contain, remove and dispose of materials as needed

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Attachment H

Storm Water Quality Construction Site Inspection Checklist

SWPPP Inspection Checklist
Lucerne Solar

WDID#:____________________

Inspection Type (circle): Routine Pre Interim Post

Date:
Time:

No.	Inspection Question	Yes	No	Corrective action taken and date
1	Is tracking control properly installed, maintained, and effectively preventing tracking off site?			
2	Are sediment control BMPs properly installed and maintained?			
3	Are additional sediment control BMPs needed?			
4	Are erosion control BMPs properly installed and maintained?			
5	Are additional erosion control BMPs needed?			
6	Is waste properly disposed of in designated areas?			
7	Are materials properly stored in designated areas?			
8	Is soil properly protected from leaks or drips from equipment?			
9	Are concrete washout pit properly installed, used, and maintained?			
10	Is SWPPP being continually updated?			

Comments:

Inspector Signature, date		Contractor Signature, date	
Printed Name and Title		Printed Name and Title	
Storm Start:		Total Rainfall (in):	
Storm Finish:		Days since last rain:	

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Attachment I

Trained Contractor Personnel Log

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Storm Water Management Training Log

Project Name: Lucerne Solar

Project Number/Location: WDID No: Lucerne Valley, CA

Storm Water Management Topic: (check as appropriate)

☐ Erosion Control
☐ Wind Erosion Control
☐ Non-storm water management
☐ Storm Water Sampling
☐ Sediment Control
☐ Tracking Control
☐ Waste Management and Materials Pollution Control

Specific Training Objective: ______

Location: ______ Date: ______

Instructor: ______ Telephone: ______

Course Length (hours): ______

Attendee Roster (attach additional forms if necessary)

Name	Company	Phone

Name	Company	Phone

COMMENTS:

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Summary of SWPPP Author - Training / Qualifications

Aaron Mlynek, CPESC (#3344)

Certifications/Degrees

- Certified Professional in Erosion and Sediment Control
- Certified Erosion, Sediment and Storm Water Inspector
- Certified Inspector of Sediment and Erosion Control
- B.S. in Natural Resource Management and Conservation

Training

- IECA
  - SWPPP Design / Planning
  - Effective Inspection Programs for Construction Site Runoff Control
  - BMP Application and Design
- University of Minnesota
  - SWPPP Design
  - Construction Site Stormwater Management

Memberships

- International Erosion Control Association
- Minnesota Erosion Control Association

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Attachment J

Subcontractor Notification Letter and Notification Log

SWPPP Notification

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Company
Address
City, State, ZIP

Dear Sir/Madam,

Please be advised that the California State Water Resources Control Board has adopted the General Permit (General Permit) for Storm Water Discharges Associated with Construction Activity (CAS000002). The goal of these permits is prevent the discharge of pollutants associated with construction activity from entering the storm drain system, ground and surface waters.

Chevron Energy Solutions Company has developed a Storm Water Pollution Prevention Plan (SWPPP) in order to implement the requirements of the Permits.

As a subcontractor, you are required to comply with the SWPPP and the Permits for any work that you perform on site. Any person or group who violates any condition of the Permits may be subject to substantial penalties in accordance with state and federal law. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP and the Permits. A copy of the Permits and the SWPPP are available for your review at the construction office. Please contact me if you have further questions.

Sincerely,

Raphael Varieras
Project Development Manager
Chevron Energy Solutions Company

SUBCONTRACTOR NOTIFICATION LOG

Project Name: Lucerne Solar

Project Number/Location: WDID #:

SUBCONTRACTOR COMPANY NAME	CONTACT NAME	ADDRESS	PHONE NUMBER	PAGER/ FIELD PHONE	DATE NOTIFICATION LETTER SENT	TYPE OF WORK

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USE ADDITIONAL PAGES AS NECESSARY

Attachment K

Notice of Non-Compliance

To: Date:

Subject: Notice of Non-Compliance

Project Name:	Lucerne Solar	
Project Number/Location:	WDID #:	Lucerne Valley, CA

In accordance with the NPDES Statewide Permit for Storm Water Discharges Associated with Construction Activity, the following instance of discharge is noted:

Date, time, and location of discharge

Nature of the operation that caused the discharge

Initial assessment of any impact cause by the discharge

Existing BMP(s) in place prior to discharge event

Date of deployment and type of BMPs deployed after the discharge.

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Steps taken or planned to reduce, eliminate and/or prevent recurrence of the discharge

Implementation and maintenance schedule for any affected BMPs

If further information or a modification to the above schedule is required, notify the contact person below.

Name of Contact Person

Title

Company

Telephone Number

Signature

Date

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Attachment L

Storm Water Pollution Prevention Plan (SWPPP) and Monitoring Program Checklist

CONSTRUCTION PROJECT: Lucerne Solar

PREPARER: Aaron Mlynek, CPESC (#3344)

Project NO: 20081195 (Westwood Project #) WDID#:

SECTION A: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	**SWPPP Section**	**ITEM**	**GENERAL PERMIT REF.**	**COMMENTS**
	100	***SWPPP Certification and Approval***	***C.10***	
	100.1	SWPPP Certification	***C.10***	
	100.2	SWPPP Approval	***C.10***	
	200	***SWPPP Amendments***	***A.4.a, A.16***	
	200.1	Amendment number and date entered into SWPPP – Amendment Log	***A.4.a, A.16***	
	200.2	Amendment Certification and Approval	***A.4.a, A.16***	
	300	***Introduction/Project Description***		
	300.1	Project Description and Location (narrative)	***A.5.a.1***	
	300.2	Unique Site Features (narrative)	***A.5.a.1***	
	300.4	***Project Schedule (narrative and graphical)***	***A.5.c.5***	
	400	***References***	***A.14***	
	500.2	***Vicinity Map (narrative or graphic)***	***A.5.a.1***	

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SECTION A: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	**SWPPP Section**	**ITEM**	**GENERAL PERMIT REF.**	**COMMENTS**
	500.2	Site perimeter	A.5.a.1	
	500.2	Geographic Features	A.5.a.1	
	500.2	General topography	A.5.a.1	
	500.4	***Water Pollution Control Drawings (WPCDs) (graphic or narrative)***	A.5.a.2	
	500.4	***Site perimeter***	***A.5.a.2***	
	500.4	Existing and proposed buildings, lots, and roadways	***A.5.a.2***	
	500.4	Storm water collection and discharge points	***A.5.a.2***	
	500.4	General topography before and after construction	***A.5.a.2***	
	500.4	Anticipated discharge location(s)	***A.5.a.2***	
	500.4	Drainage patterns including the entire relevant drainage areas	***A.5.a.2***	
	500.4	Temporary on-site drainage(s)	***A.5.a.2***	
	500.3	***Pollutant Source and BMP Identification (narrate/ or indicate on site map)***	A.5.b	
		Drainage	A.5.b.1	
	500.4	Drainage patterns after major grading	A.5.b.1	
	500.4	Slopes after major grading	A.5.b.1	
	Attach. E	Calculations for storm water run-on	A.5.b.1	
	500.4	BMPs that divert off-site drainage from passing through site	A.5.b.1	
	500.4	***Storm Water Inlets***	A.5.b.2	
	500.4	Drainage patterns to storm water inlets or receiving water	A.5.b.2	
	500.4	BMPs that protect storm water inlets or receiving water	A.5.b.2	
		Site History (narrative; if possible, indicate location(s) on the Water Pollution Control Drawings)	A.5.b	

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SECTION A: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	**SWPPP Section**	**ITEM**	**GENERAL PERMIT REF.**	**COMMENTS**
	500.3.3	Nature of fill material and data describing the soil. Description of toxic materials treated, stored, disposed, spilled or leaked on site	A.5.b.3	
	500.3.8 & 500.3.9	BMPs that minimize contact of contaminants with storm water	A.5.b.3	
		Location of Areas Designated for:	A.5.b.4	
	500.3.8 & 500.4	Vehicle storage & service	A.5.b.4	
	500.3.8 & 500.4	Equipment storage, cleaning, maintenance	A.5.b.4	
	500.3.9 & 500.4	Soil or waste storage	A.5.b.4	
	500.3.9 & 500.4	Construction material loading, unloading, storage and access	A.5.b.4	
	500.3.8 & 500.3.9	Areas outside of physical site (yards, borrow areas, etc.)		
		BMP Locations or Descriptions for:	A.5.b.5	
	500.3.9 & 500.4	Waste handling and disposal areas	A.5.b.5	
	500.3.9 & 500.4	On-site storage and disposal of construction materials and waste	A.5.b.5	
	500.3.8, 500.3.9 & 500.4	Minimum exposure of storm water to construction materials, equipment, vehicles, waste	A.5.b.5	
	500.6	***Post Construction BMPs***	A.5.b.6	
	500.6.1	Listing or Description of Post-construction BMPs	A.5.b.6	
	500.4	Location of post-construction BMPs	A.5.b.6	
	500.6.2	Parties responsible for long-term maintenance	A.5.b.6	
		Additional Information	A.5.c	
	500.3.1	Description of other pollutant sources and BMPs	A.5.c.1	
	500.3.2	Pre-construction control practices	A.5.c.1	
	500.3.1	Inventory of materials and activities that may pollute storm water	A.5.c.2	
	500.3.8 & 500.3.9	BMPs to reduce/eliminate potential pollutants listed in the inventory	A.5.c.2	
	300.4	Runoff coefficient (before & after)	A.5.c.3	
	300.4	Percent impervious (before & after)	A.5.c.3	

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SECTION A: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

CHECK IF ADDRESSED **N/A IF NOT APPLICABLE**	**SWPPP Section**	**ITEM**	**GENERAL PERMIT REF.**	**COMMENTS**
	Attach. F	Copy of the NOT	A.5.c.4	
	300.3	Construction activity schedule	A.5.c.5	
	300.5	Contact information	A.5.c.6	
	500.4.1	**SOIL STABILIZATION (EROSION CONTROL)**	A.6	
		The SWPPP shall include:	A.6.a-c	
	500.4	Areas of vegetation on site	A.6.a.1	
	500.4	Areas of soil disturbance that will be stabilized during rainy season	A.6.a.2	
	500.4	Areas of soil disturbance which will be exposed during any part of the rainy season	A.6.a.3	
	300.4	Implementation schedule for erosion control measures	A.6.a.4	
	500.3.4	BMPs for erosion control	A.6.b	
	500.3.7	BMPs to control wind erosion	A.6.c	
	500.3.5	**SEDIMENT CONTROL**	A.8	
	500.3.5 & 500.4	Description/Illustration of BMPs to prevent increase of sediment load in discharge	A.8	
	300.4, 500.3.5	Implementation schedule for sediment control measures	A.8	
	500.3.6	BMPs to control sediment tracking	A.8	
	500.3.8 & 500.3.9	**NON-STORM WATER MANAGEMENT**	A.9	
	500.3.8 & 500.3.9	Description of non-storm water discharges to receiving waters	A.9	
	500.3.8 & 500.3.9	Locations of discharges	A.9	
	500.3.8 & 500.3.9	Description of BMPs	A.9	
	300.5	Name and phone number of person responsible for non-storm water management	A.9	
	500.6	**POST-CONSTRUCTION**	A.10	
	500.6.1	Description of post-construction BMPs	A.10	
	500.6.2	Operation/Maintenance of BMPs after project completion (including short-term funding, long-term funding and responsible party)	A.10	
	500.5	**MAINTENANCE, INSPECTIONS, AND REPAIR**	A.11	

SECTION A: STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	SWPPP Section	ITEM	GENERAL PERMIT REF.	COMMENTS
	300.5, 600.1	Name and phone number of person(s) responsible for inspections	A.11	
	600.1, Attach. H	Complete inspection checklist: date, weather, inadequate BMPs, visual observations of BMPs, corrective action, inspector's name, title, signature	A.11.a-f	
		OTHER REQUIREMENTS	A.12-16	
	500.7	Documentation of all training	A.12	
	500.8	List of Contractors/Subcontractors	A.13	

SECTION B: MONITORING AND REPORTING REQUIREMENTS

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	SWPPP Section	ITEM	GENERAL PERMIT REF.	COMMENTS
	600.1	Description of Site Inspection Plans	B.3	
	100.3	Compliance certification (annually 7/1)	B.4	
	600.2	Discharge reporting	B.5	
	600.3	Keep records of all inspections, compliance certifications, and noncompliance reports on site for a period of at least three years	B.6	
	600.4	Sampling and Analysis Plan for Sediment	B.7	
	600.5	Sampling and Analysis Plan for Non-Visible Pollutants	B.8	

SECTION C: STANDARD PROVISIONS FOR CONSTRUCTION ACTIVITIES

CHECK IF ADDRESSED N/A IF NOT APPLICABLE	SWPPP Section	ITEM	GENERAL PERMIT REF.	COMMENTS
	100.1	Signed SWPPP Certification	C.9,10	

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Attachment M

Annual Certification of Compliance Form

Project Name: Lucerne Solar

Project Number: WDID #:

Company Name: Chevron Energy Solutions Company

Address: 345 California Street, 18th Floor, San Francisco, CA 94104

Construction Start Date: ______________ **Completion Date:** ______________

This project is in compliance with the General Permit and this SWPPP (check yes or no) ___ **YES** ___ **NO**

Description of Work:

Work Now in Progress:

Work Planned for Next 12 Months:

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"I certify under penalty of law that, during the past 12 months, the construction activities are in compliance with the requirements of the General Permit and this SWPPP. This Certification is based upon the site inspections required in Section B, Item 3 of the General Permit. This document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

______________________________ ______________
Owner (or Authorized Representative) Signature Date

______________________________ ______________
Name and Title Telephone Number

Attachment N

Other Plans and Permits

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Attachment O

Notice of Termination

(Owner to insert completed Notice of Termination upon project completion and related proof of submittal and correspondences for records).

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Attachment P

Sampling Activity Log

RAIN EVENT GENERAL INFORMATION				
Project Name	Lucerne Solar			
Project Number	WDID #:			
Contractor				
Sampler's Name				
Signature				
Date of Sampling				
Season (Check Applicable)	☐ Rainy		☐ Non-Rainy	
Storm Data	Storm Start Date & Time:		Storm Duration (hrs):	
	Time elapsed since last storm (Circle Applicable Units)	Min. Hr. Days	Approximate Rainfall Amount (inches)	

For rainfall information: http://cdec.water.ca.gov/weather.html or http://www.wrh.noaa.gov/wrhq/nwspage.html

SAMPLE LOG		
Sample Identification	**Sample Location**	**Sample Collection Date and Time**

Specific sample locations descriptions may include: 100 ft upstream from discharge at eastern boundary, runoff from northern waste storage area, down gradient of inlet located near the intersection of A Street and B Avenue, etc.

FIELD ANALYSIS		
	☐Yes ☐ No	
Sample Identification	**Test**	**Result**

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Attachment Q

Pollutant Testing Guidance Table

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Attachment Q
Pollutant Testing Guidance Table [1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Asphalt Products	Hot Asphalt	Yes - Rainbow Surface or Brown Suspension	Visually Observable - No Testing Required		
	Asphalt Emulsion				
	Liquid Asphalt (tack coat)				
	Cold Mix				
	Crumb Rubber	Yes – Black, solid material	Visually Observable - No Testing Required		
	Asphalt Concrete (Any Type)	Yes - Rainbow Surface or Brown Suspension	Visually Observable - No Testing Required		
Cleaning Products	Acids	No	**pH** Acidity Anions (acetic acid, phosphoric acid, sulfuric acid, nitric acid, hydrogen chloride)	pH Meter Acidity Test Kit	EPA 150.1 (pH) SM 2310B (Acidity) EPA 300.0 (Anion)
	Bleaches	No	Residual Chlorine	Chlorine	SM 4500-CL G (Res. Chlorine)
	Detergents	Yes - Foam	Visually Observable - No Testing Required		
	TSP	No	Phosphate	Phosphate	EPA 365.3 (Phosphate)
	Solvents	No	**VOC**	None	EPA 601/602 or EPA 624 (VOC)

Attachment Q
Pollutant Testing Guidance Table [1]

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Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
			SVOC	None	EPA 625 (SVOC)
Portland Concrete Cement & Masonry Products	Portland Cement (PCC)	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Masonry products	No	**pH**	pH Meter Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
			Alkalinity		SM 2320 (Alkalinity)
	Sealant (Methyl Methacrylate - MMA)	No	Methyl Methacrylate	None	EPA 625 (SVOC)
			Cobalt		EPA 200.8 (Metal)
			Zinc		
	Incinerator Bottom Ash Bottom Ash Steel Slag Foundry Sand Fly Ash Municipal Solid Waste	No	**Aluminum** **Calcium** **Vanadium** **Zinc**	Calcium Test	EPA 200.8 (Metal) EPA 200.7 (Calcium)
	Mortar	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Concrete Rinse Water	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Non-Pigmented Curing Compounds	No	Acidity	pH Meter Alkalinity or Acidity Test Kit	SM 2310B (Acidity)
			Alkalinity		SM 2320 (Alkalinity)

Attachment Q
Pollutant Testing Guidance Table [1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
			pH		EPA 150.1 (pH)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
Landscaping and Other Products	Aluminum Sulfate	No	Aluminum	TDS Meter Sulfate	EPA 200.8 (Metal)
			TDS		EPA 160.1 (TDS)
			Sulfate		EPA 300.0 (Sulfate)
	Sulfur-Elemental	No	Sulfate	Sulfate	EPA 300.0 (Sulfate)
	Fertilizers-Inorganic [4]	No	Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Phosphate	Phosphate	EPA 365.3 (Phosphate)
			Organic Nitrogen	None	EPA 351.3 (TKN)
			Potassium	None	EPA 200.8 (Metal)
	Fertilizers-Organic	No	TOC	Nitrate	EPA 415.1 (TOC)
			Nitrate		EPA 300.0 (Nitrate)
			Organic Nitrogen		EPA 351.3 (TKN)
			COD		EPA 410.4 (COD)

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Attachment Q
Pollutant Testing Guidance Table[1]

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Category	Construction Site Material	Visually Observable?	Pollutant Indicators[2]	Suggested Analyses Field[3]	Laboratory
	Natural Earth (Sand, Gravel, and Topsoil)	Yes - Cloudiness and turbidity	Visually Observable - No Testing Required		
	Herbicide	No	Herbicide	None	Check lab for specific herbicide or pesticide
	Pesticide		**Pesticide**		
	Lime		Alkalinity	pH Meter Alkalinity or Acidity Test Kit	SM 2320 (Alkalinity)
			pH		EPA 150.1 (pH)
Painting Products	Paint	Yes	Visually Observable - No Testing Required		
	Paint Strippers	No	VOC	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)
	Resins	No	COD	None	EPA 410.4 (COD)
			SVOC		EPA 625 (SVOC)
	Sealants	No	COD	None	EPA 410.4 (COD)
	Solvents	No	COD	None	EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)

Attachment Q
Pollutant Testing Guidance Table [1]

DRAFT

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
			pH		EPA 150.1 (pH)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
Landscaping and Other Products	Aluminum Sulfate	No	Aluminum	TDS Meter Sulfate	EPA 200.8 (Metal)
			TDS		EPA 160.1 (TDS)
			Sulfate		EPA 300.0 (Sulfate)
	Sulfur-Elemental	No	Sulfate	Sulfate	EPA 300.0 (Sulfate)
	Fertilizers-Inorganic [4]	No	Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Phosphate	Phosphate	EPA 365.3 (Phosphate)
			Organic Nitrogen	None	EPA 351.3 (TKN)
			Potassium	None	EPA 200.8 (Metal)
	Fertilizers-Organic	No	TOC	Nitrate	EPA 415.1 (TOC)
			Nitrate		EPA 300.0 (Nitrate)
			Organic Nitrogen		EPA 351.3 (TKN)
			COD		EPA 410.4 (COD)

Attachment Q
Pollutant Testing Guidance Table [1]

DRAFT

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Natural Earth (Sand, Gravel, and Topsoil)	Yes - Cloudiness and turbidity	Visually Observable - No Testing Required		
	Herbicide	No	Herbicide	None	Check lab for specific herbicide or pesticide
	Pesticide		**Pesticide**		
	Lime		Alkalinity	pH Meter Alkalinity or Acidity Test Kit	SM 2320 (Alkalinity)
			pH		EPA 150.1 (pH)
Painting Products	Paint	Yes	Visually Observable - No Testing Required		
	Paint Strippers	No	VOC	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)
	Resins	No	COD	None	EPA 410.4 (COD)
			SVOC		EPA 625 (SVOC)
	Sealants	No	COD	None	EPA 410.4 (COD)
	Solvents	No	COD	None	EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)

Attachment Q
Pollutant Testing Guidance Table [1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Lacquers, Varnish, Enamels, and Turpentine	No	COD	None	EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Thinners	No	VOC	None	EPA 601/602 or EPA 624 (VOC)
			COD		EPA 410.4 (COD)
Portable Toilet Waste Products	Portable Toilet Waste	Yes	Visually Observable - No Testing Required		
Contaminated Soil [5]	Aerially Deposited Lead[3]	No	Lead	None	EPA 200.8 (Metal)
	Petroleum	Yes – Rainbow Surface Sheen and Odor	Visually Observable - No Testing Required		
	Other	No	Contaminant Specific	Contaminant Specific	Contaminant Specific
Line Flushing Products	Chlorinated Water	No	Total chlorine	Chlorine	SM 4500-CL G (Res. Chlorine)
Adhesives	Adhesives	No	COD	None	EPA 410.4 (COD)
			Phenols	Phenol	EPA 420.1 (Phenol)
			SVOC	None	EPA 625 (SVOC)

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Attachment Q
Pollutant Testing Guidance Table [1]

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Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Dust Palliative Products	Salts (Magnesium Chloride, Calcium Chloride, and Natural Brines)	No	Chloride	Chloride	EPA 300.0 (Chloride)
			TDS	TDS Meter	EPA 160.1 (TDS)
			Cations (Sodium, Magnesium, Calcium)	None	EPA 200.7 (Cations)
Vehicle	Antifreeze and Other Vehicle Fluids	Yes - Colored Liquid	Visually Observable - No Testing Required		
	Batteries	No	Sulfuric Acid	None	EPA 300.0 (Sulfate)
			Lead	None	EPA 200.8 (Metal)
			pH	pH Meter Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
	Fuels, Oils, Lubricants	Yes - Rainbow Surface Sheen and Odor	Visually Observable - No Testing Required		
Soil Amendment/Stabilization Products	Polymer/Copolymer [6, 7]	No	Organic Nitrogen	None	EPA 351.3 (TKN)
			BOD	None	EPA 405.1 (BOD)
			COD	None	EPA 410.4 (COD)
			DOC	None	EPA 415.1 (DOC)
			Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Sulfate	Sulfate	EPA 300.0 (Sulfate)
			Nickel	None	EPA 200.8 (Metal)
	Straw/Mulch	Yes - Solids	Visually Observable - No Testing Required		

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Attachment Q
Pollutant Testing Guidance Table [1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Lignin Sulfonate	No	Alkalinity	Alkalinity	SM 2320 (Alkalinity)
			TDS	TDS Meter	EPA 160.1 (TDS)
	Psyllium	No	COD	None	EPA 410.4 (COD)
			TOC		EPA 415.1 (TOC)
	Guar/Plant Gums	No	COD	None	EPA 410.4 (COD)
			TOC		EPA 415.1 (TOC)
			Nickel		EPA 200.8 (Metal)
	Gypsum	No	pH	pH Meter Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
			Calcium	Calcium	EPA 200.7 (Calcium)
			Sulfate	Sulfate	EPA 300.0 (Sulfate)
			Aluminum	None	EPA 200.8 (Metal)
			Barium		
			Manganese		
			Vanadium		
Treated Wood Products	Ammoniacal-Copper-Zinc-Arsenate (ACZA) Copper-Chromium-Arsenic (CCA)	No	Arsenic	Total Chromium	EPA 200.8 (Metal)
			Total Chromium		
			Copper		

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Attachment Q
Pollutant Testing Guidance Table [1]

Category	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Ammoniacal-Copper-Arsenate (ACA) Copper Naphthenate		Zinc		
	Creosote	Yes - Rainbow Surface or Brown Suspension	Visually Observable - No Testing Required		

Notes:

1. 1 If specific pollutant is known, analyze only for that specific pollutant. See MSDS to verify.
2. For each construction material, test for one of the pollutant indicators. Bolded pollutant indicates lowest analysis cost or best indicator. However, the composition of the specific construction material, if known, is the first criterion for selecting which analysis to use.
3. See www.hach.com, www.lamotte.com, www.ysi.com and www.chemetrics.com for some of the test kits
4. If the type of inorganic fertilizer is unknown, analyze for all pollutant indicators listed.
5. Only if special handling requirements are required in the contract documents for aerially deposited lead (ADL)
6. If used with a dye or fiber matrix, it is considered visually observable and no testing is required.
7. Based upon research conducted by the State of California Department of Transportation (Caltrans), the following copolymers/polymers do not discharge pollutants and water quality sampling and analysis is **not** required: Super Tak™, M-Binder™, Fish Stik™, Pro40dc™, Fisch-Bond™, and Soil Master WR™.

Attachment R

Discharge Reporting Log

Project Name: Lucerne Solar

Project Number: WDID #

Date	Material(s) Discharged	Estimated Quantity	Observed By

Attachment S

Emergency Contact List

Owner
Chevron Energy Solutions Company, A
Division of Chevron USA, Inc
345 California Street, 18th Floor
San Francisco, California 94104
Raphael Varieras
415-733-4735

Certified Laboratory
Lab Name
Street address
City, state, zip
Contact person
Phone number

Contractor
Contractor Name
Street address
City, state, zip
Contact person
Phone number

SWPPP Preparer
Westwood Profession Services, Inc.
7699 Anagram Drive
Eden Prairie, Minnesota 55431
Aaron Mlynek, CPESC
952-697-5710

SWPPM
Contractor Name
Street address
City, state, zip
Contact person
Phone number

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Appendix J
Spill Prevention and Response Plan

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SPILL PREVENTION AND RESPONSE PLAN
THE LUCERNE SOLAR PROJECT
SAN BERNARDINO COUNTY, CALIFORNIA

Revision 1 dated: January 12, 2009

Chevron Energy Solutions
345 California Street, 18th Floor
San Francisco, CA 94104

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List of Acronyms and Abbreviations

BLM	Bureau of Land Management
CDFG	California Department of Fish and Game
CFR	Code of Federal Regulations
Project	Lucerne Solar Project
SPRG	Spill Prevention and Response Plan

SECTION 1 INTRODUCTION

1.1 PURPOSE

Chevron Energy Solutions has prepared this Spill Prevention and Response (SPRP) Plan to be implemented during both the construction and operational phases of the Lucerne Solar Project. The Project will consist of a 516 acre, solar photovoltaic facility on BLM land near the town of Lucerne Valley in San Bernardino, California (Figure 1). This land offers a typical desert landscape crossed by regional drainages that have been delineated as 'waters of the State' by CDFG.

This SPRP Plan provides restrictions and procedures for fuel storage, fueling activities, and construction equipment maintenance on the project site. Training and lines of communication to facilitate the prevention, response, containment, and cleanup of spills during construction activities are also outlined. The goals of this plan are to minimize the potential for a spill, to contain any spillage to the smallest area possible, and to protect areas that are considered environmentally sensitive (e.g., jurisdictional water ways, groundwater wells, etc.).

All operations, contractor and subcontractor personnel working on the Lucerne Solar Project are responsible for implementation of the measures and procedures defined in this SPRP Plan. This plan will be included, as written herein, in both the bid and the contract documents as contractual requirements and instructions to the contractor.

SECTION 2 PREVENTATIVE MEASURES

2.1 HAZARDS ASSESSMENT

The hazardous materials that may be on site during construction and operation of the solar field include those usually associated with operation and maintenance of vehicles and machinery, such as: diesel fuel, gasoline, hydraulic fluid, brake fluid, antifreeze and lubricants. Other materials considered hazardous are chemicals used in portable toilets and the associated human waste and herbicides that are used in the weed control plan. There is also the possibility of encountering buried hazardous or toxic materials during the construction process. Each of these hazards is briefly discussed in the following sections.

2.1.1 Vehicle Fluids

The materials associated with vehicle operation and maintenance are hazardous to humans, wildlife and sensitive environments. Spills of diesel fuel, gasoline, and hydraulic fluid are considered and spill prevention and control measures must be initiated. These materials can be toxic to the skin, eyes, respiratory system, and internal organs. Toxicity can be transmitted in the form of liquid or vapor. These materials may also be flammable and combustible, and proper precautions must be used in handling spills. Antifreeze, Freon, and other non-petroleum products are also hazardous toxic substances. The same spill prevention and response actions are to be employed with spills of these materials.

Potential sources of spills of vehicle fluids include mobile refueling trucks and construction vehicles and equipment. Potential causes of vehicle fluid spills include: emergency ruptures in fuel tanks or construction equipment; overflow of fuel from the tank during the refueling of equipment; seepage of fuel or lubricants during normal operation or storage; spills of oil or hydraulic fluid, etc. during on-site vehicle and equipment servicing; vehicle accidents; and natural disasters.

2.1.2 Chemical Toilets and Human Waste

Proper disposal and disinfection of human waste at the construction site is required. Human waste may contain infectious bacteria, pathogens, or other health hazards. Waste must be contained in portable toilets that receive periodic cleaning and disposal of waste. Chemicals used in toilets are also hazardous to wildlife and sensitive environments. Portable chemical toilets could overflow if not pumped regularly or they could spill if dropped or overturned during moving.

2.1.3 Herbicides

Herbicides will be used during both construction and operation to control nonnative plant populations. As these herbicides are generally stored in concentrated liquid form, potential fluid spills include: handling errors and ruptures in storage tanks.

2.1.4 Unknown Hazardous Materials

Given the previous mining activity on the site, the potential exists for encountering unknown hazardous materials within the construction site. These materials would most likely take the form of buried containers containing used lubricants, batteries, and etc. If any unknown waste is discovered, construction in that particular area shall stop until the material encountered is properly identified and removed.

2.2 CONTRACTOR RESPONSIBILITIES

Chevron will require its contractors and any subcontractors to do everything practicable to minimize the potential for a spill during construction of the Lucerne Solar Project. This will include compliance with applicable environmental and safety laws and regulations. Each contractor will be required to ensure a copy of this plan is available onsite to all contractor and subcontractor personnel.

2.3 TRAINING

All Chevron construction and operations personnel as well as contractor employees and subcontractors involved with transporting or handling fueling equipment or maintaining construction equipment will be required to complete spill training before they commence work on the project. Chevron will audit contractor compliance with respect to this requirement and instruct the contractor to replace any employee (or subcontractors' employee) found to be working on the project prior to having spill training. Spill training will also be required for contractor and subcontractor supervisory personnel prior to commencement of work on the project.

Spill training programs will be conducted by the construction contractor and the Chevron Construction Manager and will:

- Provide information concerning pollution control laws;
- Inform personnel concerning the proper operation and maintenance of fueling equipment;
- Inform personnel of spill prevention and response requirements; and
- Describe the measures and provisions of the SPRP Plan; and
- Assign roles and responsibilities for implementing the SPRP.

Measures, responsibilities, and provisions of this SPRP Plan and Training for other workers will be provided through ongoing weekly meetings, which will discuss safety, and spill prevention and response, including personal responsibility to initiate appropriate procedures. These weekly sessions will be held by the contractor as crew "tail gate" meetings. Chevron will audit the contractor compliance with this requirement and instruct the contractor to replace any foremen (or subcontractors' foremen) found to not be holding such meetings following the receipt of one warning. Attendance of training sessions will be documented using sign-in sheets that will become part of the permanent construction records.

2.4 RELEASE RESPONSE EQUIPMENT

The contractor will supply two spill prevention kits that can be used in the event of a spill, leak or other release. The spill prevention kits will be stored at contractor's laydown area. Each spill prevention kit will consist of the following:

- One 55-gallon drum,
- Two bags of absorbent,
- One bag of absorbent pads,
- One 400 square foot sheet of plastic sheeting,
- Two short handled shovels,
- One tyvek suit and booties
- Two pair of nitrile gloves, and
- Two pair of safety goggles.

In addition, the contractor shall provide a more portable, 20 gallon spill prevention kit for each refueling truck. These kits shall contain: :(25) 17" X 19" white oil-only Sonic Bonded pads, (4) 3" x 48" white oil-only socks, (2) 18" x 18" white oil-only pillows, (1) pair nitrile gloves, (1) pair goggles, (2) clear disposal bags, (3) bag ties, (1) 20 gallon over pack. Oil only products will soak up oil and repel water.

The contractor's Spill Coordinator (Section 4.1) will make known to all personnel involved with the construction (foremen, laborers, and inspectors), the contractor's warehouse/trailer locations of the spill prevention kits. These spill prevention kits will be readily accessible during construction. During operation, two, portable spill prevention packs will be stored in the Operations and Maintenance Building.

2.5 EQUIPMENT INSPECTION

Prior to moving any equipment onto the construction site, the contractor will visually inspect each piece of equipment for cracks, excessive corrosion, or other flaws that may compromise the integrity of its fuel, hydraulic, or cooling systems. The contractor will repair or replace leaking equipment immediately after a leak is detected and will be responsible for prompt reporting and mitigation of any fuel or lubricant spills from their equipment.

SECTION 3 REGULATED MATERIALS STORAGE AND HANDLING

3.1 CONTRACTOR LAYDOWN AREAS

3.1.1 Contractors and operations personnel will not store fuel onsite. Any other petroleum products, herbicides or hazardous materials at the contractor's laydown area will be stored in safe locations within secondary containment structures. Secondary containment systems normally consist of a bermed area lined with an impervious material to provide a minimum containment volume equal to 150 percent of the volume of the largest storage vessel contained within the bermed area. Spill kits will be stored in readily accessible areas for quick use in the event that they are needed by the construction personnel.

3.1.2 Hazardous liquids will not be stored in areas subject to periodic flooding or within 100 feet of jurisdictional water boundaries. All hazardous materials stored at either the construction laydown or staging area or the operations and maintenance building will be stored in secure (fenced) areas. Accumulated rainwater may be removed if authorized by an Environmental Inspector under specific situations. Specifically, if visual inspection indicates that no spillage has occurred in the containment structure and if no sheen is present on the accumulated rainwater. If spillage has occurred in the structure, accumulated wastewater will be drawn off and pumped into a storage vessel for proper disposal.

3.1.3 All fuel nozzles will be equipped with functional automatic shut-off valves. Drip trays and sorbent pads should be used during on-site re-fueling to minimize spills. Prior to departure of any fuel tank truck, all outlets on the vehicle will be examined by the driver for leakage and tightened, adjusted, or replaced to prevent leaking while in transit.

3.1.4 Routine equipment maintenance of wheel-mounted vehicles such as oil changes will be accomplished at the contractor yards or staging areas to the greatest extent practical. Routine maintenance of track-mounted equipment will be conducted in a manner to gather all oil and other discharges and removed from the project site to a suitable recycling or disposal site.

3.1.5 Storage containers will display labels that identify the contents of the container and whether the contents are hazardous. The contractor will provide and maintain copies on site of Material Safety Data Sheets (MSDS) for all materials accessible to all contractor personnel including subcontractor

3.1.6 The contractor will provide, maintain, and make available the appropriate MSDS documents for all hazardous or controlled materials utilized on the project site or in the contractor's lay down area at an on-site location accessible to all contractor, subcontractor, and Chevron employees.

3.2 VEHICLE AND EQUIPMENT MAINTENANCE

All vehicle and equipment maintenance on the project site involving fluid replacement will be conducted at least 100 feet away from the boundary restrictions for jurisdictional waters of the State. Before lubricants are drained from the construction equipment, a suitable containment vessel and plastic sheeting will be placed under the equipment to collect any spilled material. The contractor will take necessary precautions to ensure that material that might accumulate on the liner does not spill on the ground surface. Vehicle maintenance wastes, including used oils and other fluids, will be handled and managed by personnel trained in the procedures outlined in this plan. Vehicle maintenance wastes will be stored and disposed of in accordance with applicable environmental regulations.

SECTION 4 SPILL RESPONSE

In the event of a spill, the release will be contained and cleaned up as soon as possible. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and control costs associated with cleanup and remediation. The initial response to an emergency will be to protect human health and safety, and then the environment. If a spill is not contained within a dike, an area of isolation will be established around the spill. The size of this area will depend on the size of the spill and the materials involved. The contractor will take precautions in the area of a spill to eliminate possible sources of ignition.

4.1 SPILL COORDINATOR

The contractor or plant operator (if during the operations phase) will appoint a Spill Coordinator who will be responsible for the reporting of spills, coordinating contractor personnel for spill cleanup, subsequent site investigations, and associated incident reports. The Spill Coordinator will report to the Chevron Construction Manager or other designated Chevron onsite representative. In the event of a spill, the Spill Coordinator will be responsible for determining the extent of the isolation area and insuring that proper clean up and disposal measures are initiated. Any notifications under Section 6 of this plan shall be the responsibility of the Chevron site representative.

4.2 IMMEDIATE RESPONSE

All spills regardless of size must be reported to the Spill Coordinator and/or the Chevron Site Representative. The person observing the incident will take the following actions:

- Assess the situation.
- Make every effort to stop the source of the spill and remove any potential ignition sources.
- Promptly notify the contractor's Spill Coordinator and/or Chevron's Construction Manager. Report your name, the spill location, and the extent of the incident. Upon learning of the spill, the Spill Coordinator will implement the following measures:
- Sorbent materials will be applied to the spill area. Contaminated soils and vegetation will be excavated and temporarily placed on and covered by plastic until proper disposal is arranged.

4.2.1 Specific Response Procedures

Specific response procedures have been developed for various spills including vehicle fluid spills; chemical toilet and human waste spills; herbicide spills and discovery of an unknown hazardous material.

Some response procedures common to all spills are to keep people away from the spilled material, secure the source of the spill, if this can be done safely, and determine the spilled material, the volume, extent, and potential for danger of the spill. Securing the source of the spill is an extremely important step in the response activities. However, a source should be secured only if it can be performed safely without risk to human life and health. Steps to be taken to secure the source include turning off machinery, clamping or disabling hoses, etc.

Another key element in the early response to all spills is determining the type of material spilled and the volume and extent of the spill. This should be determined as soon as possible to facilitate the proper response operations. The volume will be needed to evaluate equipment and personnel needs, as well as, requirements for containment and disposal of the recovered waste and incident reporting. A rough estimate of the spill volume can be generated from visual observation and identification of the source.

4.2.1.1 Vehicle and Machinery Spills

Incidents involving loss of a petroleum product from equipment or vehicles shall be considered a spill. After the spill has been flagged, the volume and extent of the spill estimated, and initial notification procedures implemented, the spill must be confined. Do not handle materials without wearing protective clothing (i.e. gloves, etc.).

- Determine if a spill response team is needed to complete the cleanup. If no, prepare a spill report and submit it to the onsite Chevron Representative. If yes, activate the local spill response team.
- Determine additional cleanup contractors are necessary for a major incident. If the answer is no, and the incident has been determined to be a minor spill, conduct the cleanup, inspect and file a spill report form. If the incident requires additional support, hire an additional cleanup contractor to complete the cleanup, inspect the site, dispose of the waste material and complete and file a spill report.
- Arrange for proper testing (if the substance is unknown, send a sample to a laboratory within San Bernardino County for testing and dispose of the waste.
- Closely monitor all cleanup activities.
- Ensure proper disposal of absorbent materials, containers and soils as required.
- Complete cleanup and restore damaged areas.
- Submit spill report to the Chevron Construction Manager.

4.2.1.2 Chemical Toilet Spill

Chemical toilets are self-contained and pose little threat to the construction site. Chemicals used in the portable toilets are biodegradable and generally non-toxic to humans. However, they can pose a danger to wildlife and sensitive habitats by virtue of heavy concentration of chemicals and human waste. They shall be pumped out at regular intervals. Toilets shall never be placed in or near environmentally sensitive areas or in areas with a potential for flooding.

In the unlikely event that a portable toilet spills during transport or relocation, the same procedures for other hazardous material spills shall be used. Disposal of absorbent materials shall be handled the same as other spills, with proper disposal by the toilet supply company.

4.2.1.3 Herbicides

Incidents involving a spill of a concentrated herbicide could potentially occur when storing or handling the material. After the spill has been flagged, the volume and extent of the spill estimated, and initial notification procedures implemented, the spill must be confined. Do not handle materials without wearing protective clothing (i.e. gloves, etc.).

- Determine if a spill response team is needed to complete the cleanup. If no, prepare a spill report form. If yes, activate the local spill response team.
- Determine additional cleanup contractors are necessary for a major incident. If the answer is no, and the incident has been determined to be a minor spill, conduct the cleanup, inspect and file a spill report form. If the incident requires additional support, hire an additional cleanup contractor to complete the cleanup, inspect the site, dispose of the waste material and file a spill report.
- Closely monitor all cleanup activities.
- Ensure proper disposal of absorbent materials, containers and soils as required.
- Complete cleanup and restore damaged areas.
- Submit spill report to the Chevron Construction Manager.

4.2.1.4 Unknown Hazardous Materials

There is always the possibility that personnel may unexpectedly encounter a hazardous situation when working on the site. The most likely materials that may be encountered during grading activities would be materials that are left over from past mining activities. If there is any doubt regarding the degree of hazard of the particular circumstance and personnel are unsure as to what measures to take, the following steps shall be taken immediately to ensure the health and safety of the personnel involved.

- Stop work in the immediate area of the discovery
- Determine what has been encountered, i.e. tank or other container
- Cordon off the area and
- Request a spill team to further investigate and remove the object.

SECTION 5 CLOSING OF THE SPILL INCIDENT

5.1 DISPOSAL OF WASTE

Following the cleanup of a spill, the waste, absorbent materials, protective clothing, and any soil that has been contaminated must be removed to a designated hazardous waste disposal area. All contaminated materials shall be sealed in 55 gallon drums and labeled with the contents. If the contaminant is unknown, a sample of the material must be collected and analyzed before disposal. A permit or approval in writing must be obtained prior to disposal of the drum. A copy of the permit and a chain-of-custody form (obtained from the disposal contractor or testing laboratory) must accompany the material and copies must be attached to the Spill Report Form submitted to the Chevron onsite representative. The contactor is responsible for the proper disposal of all waste and understanding the responsibilities under federal and state statutes.

5.2 FINAL REPORTING

All spill incidents that require cleanup must be reported. Notification must begin as soon as the incident occurs. The Spill Coordinator is responsible for the completion of the Spill Report Form (Appendix A). Completion of this form will assist in the assessment of the spill and will insure that the cleanup has been properly implemented. The spill report form must be submitted no longer than five days after the incident has closed. A copy of the permit or disposal approval and the chain-of-custody for the disposal must be attached to the spill report form.

5.3 FOLLOW-UP INVESTIGATION

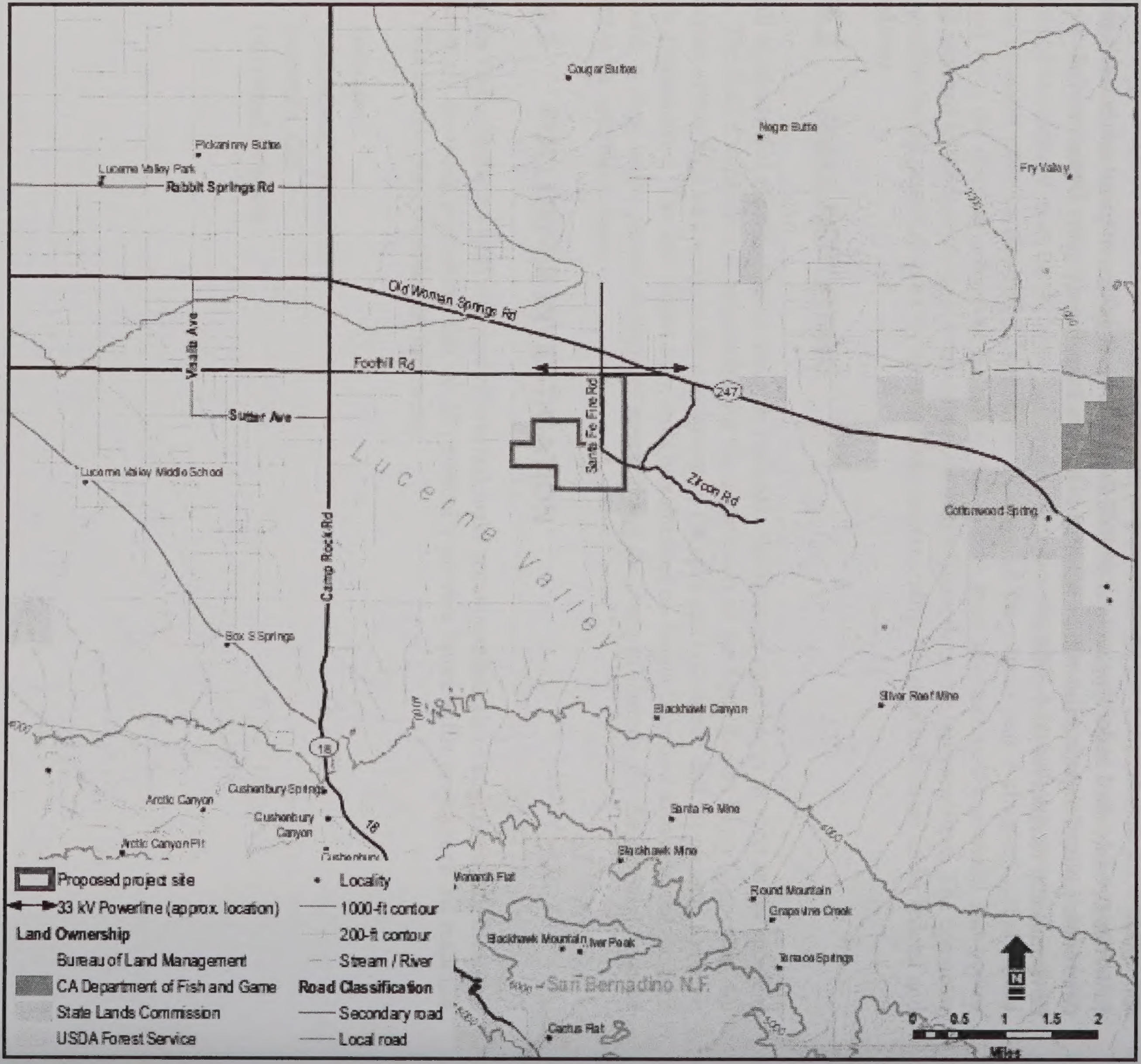
Contractor shall critique his spill response efforts and make recommendations or suggested modifications to contractor's operating procedures that could potentially prevent future spills or improve his response efforts. This critique shall consider the following:

- Detection
- Assessment/ Evaluation
- Response, and
- Command Structure

SECTION 6 NOTIFICATIONS

Once the spill has been assessed, the Chevron Site Representative will be responsible for notifying appropriate federal, state, and local agencies. Any spill at the project site of more than the reportable quantities as established under Appendix A of 40CFR172.101 or 42 gallons of petroleum based liquids or three cubic yards of impacted soil will be reported to the San Bernardino County Department of Environmental Health (909)884-4056.

Figure 1: Lucerne Solar Vicinity Map



APPENDIX A SPILL REPORT FORM

NAME OF PERSON REPORTING THE SPILL:______________________________

TITLE/POSITION:____________________ PHONE NUMBER:______________________

CONSTRUCTION CONTRACTOR SPILL COORDINATOR:______________________

CES On Site Representative:______________________________________

AUTHORIZED ALTERNATE (Contact only if you are unable to reach the CHEVRON ONSITE REPRESENTATIVE):

____

CONSTRUCTION CONTRACTOR SUPERINTENDENT:______________________

LOCATION OF, TIME AND SOURCE OF THE SPILL:______________________

TYPE OF MATERIAL RELEASED:______________________________________

ESTIMATED QUANTITY OF MATERIAL RELEASED:______________________

SOURCE OF THE MATERIAL RELEASED:______________________________

____

CORRECTIVE ACTIONS TAKEN:_______________________________________

____

____

____

SPILL RESOLUION: ____

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____

____

SPILL PREVENTION COORDINATOR:___________________________________

CHEVRON ONSITE RPEPRESENTATIVE:_________________________________

COMMENTS:

____

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Appendix K
Biological Opinion

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

IN REPLY REFER TO:
81440-2010-F-0097

June 10, 2010

Memorandum

To: Field Manager, Barstow Field Office, Bureau of Land Management, Barstow, California

/s/: Diane K. Noda

From: Field Supervisor, Ventura Fish and Wildlife Office, Ventura, California

Subject: Biological Opinion for the Lucerne Valley Chevron Solar Project, San Bernardino County, California (3031 (P) CA-680.33) (8-8-10-F-6)

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on our review of the Bureau of Land Management's (Bureau) proposed issuance of a right-of-way grant to Chevron Energy Solutions (CES) for the Lucerne Solar Electric Generating Plant and its effects on the federally threatened desert tortoise (*Gopherus agassizii*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). The proposed project involves phased construction, operation, maintenance, and decommissioning of a 45-megawatt photovoltaic power plant and associated infrastructure and facilities on approximately 516 acres of public land managed by the Bureau east of the community of Lucerne Valley. We received your request for formal consultation on December 10, 2009.

This biological opinion is based on information that accompanied your request for consultation, including the draft biological assessment (Bureau 2009), and the draft environmental impact statement (Bureau 2010). A complete record of this consultation is on file in the Ventura Fish and Wildlife Office.

The proposed action is not located within critical habitat of the desert tortoise; the nearest critical habitat unit is approximately 9 miles to the north. The proposed action will not affect critical habitat of the desert tortoise; consequently, we do not address effects to critical habitat in this biological opinion.

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25,000 gallons for Phase II. Water would be provided by truck from an outside source.

Decommissioning and Restoration

Should the proposed project site be removed from power generation service, the site will be made suitable for reclamation. All equipment, buildings, concrete foundation, and driven piles will be removed from the site. The site will be restored to its original condition as much as feasibly possible. To prevent excess erosion after decommissioning, CES will document the topographic and erosional condition of the site before and after decommissioning. CES will develop and implement a post-project erosion control plan and inspect the site quarterly for 5 years following decommissioning to determine the erosional status. A yearly report will be submitted to the Bureau documenting the status and the Bureau will determine if corrective actions are necessary to reduce the amount of erosion taking place. A detailed decommissioning plan, consistent with the Bureau's requirements, will be developed in a manner that both protects public health and safety and is environmentally acceptable. When the Bureau begins to consider decommissioning, it will contact the Service to determine whether additional consultation, pursuant to section 7(a)(2) of the Endangered Species Act, would be appropriate. Consequently, we will not analyze the potential effects of decommissioning on the desert tortoise at this time.

Avoidance and Minimization Measures

To minimize adverse effects to the desert tortoise, CES will implement the following protective measures during construction, operation, and maintenance activities. We have summarized these measures from the biological assessment (Bureau 2009) and modified them slightly as a result of discussions with the Bureau.

1. CES will smooth out ephemeral drainages and create swales that will allow the movement of water to cross the site and allow sheet drainage at the far north end of the site. Laydown areas will be located at least 100 feet away from drainages. No refueling, equipment repair, or lubrication activities will be allowed within 100 feet of the drainages. Proper spill containment materials to isolate potential spills will be used.

2. All leaks, spills, or releases of fuel or other hazardous materials will be reported immediately to the Bureau. All material that leaks, spills, or is otherwise released into habitat of the desert tortoise will be removed immediately. The authorized biologist will ensure all appropriate measures, including those proposed by CES and the biological opinion's terms and conditions, are implemented during the removal of the hazardous materials.

3. Ground clearing or grading will occur only within the fenced project right-of-way. Some vegetation within the right-of-way will be permanently removed. Healthy Joshua trees (*Yucca brevifolia*) and all cacti, except cholla species, will be salvaged in accordance with a protocol approved by the Bureau prior to the initiation of ground-disturbing events. No vegetation will be removed outside of the project right-of-way.

4. CES will employ authorized biologists, approved by the Service, California Department of Fish and Game (CDFG), and the Bureau, and desert tortoise monitors, approved by the Bureau and CDFG, to ensure compliance with protective measures for the desert tortoise. The most up-to-date Service guidance will be required for monitoring of any construction, operation, or maintenance activities that may result in injury or mortality of desert tortoises. The Service is currently using the *Desert Tortoise Field Manual* (Service 2009a).

5. CES will provide the credentials of all individuals seeking approval as authorized biologists and monitors to the Bureau. The Bureau will review the credentials and provide those of appropriate individuals to the Service and CDFG for approval at least 30 days prior to the time they must be in the field.

6. CES will designate a field contact representative (FCR) who will oversee compliance with protective measures during construction, operation, and maintenance activities that may result in injury or mortality of desert tortoises. If the FCR, authorized biologist, or desert tortoise monitor identifies a violation of the desert tortoise protective measures, they will halt work until the violation is corrected. The FCR will have a copy of the Bureau stipulations and the biological opinion at all times.

7. Desert tortoises will be handled only by the authorized biologist (or desert tortoise monitors given approval by the authorized biologist) and only when necessary.

8. The authorized biologist will conduct a desert tortoise education program, approved by the Bureau, for construction personnel, subcontractors, and all other visitors to the construction site that will address the following: a) types of construction activities that may affect the desert tortoise, b) the required desert tortoise protective measures, c) desert tortoise life history, distribution, general behavior, ecology, and threats, d) legal protections (under the State and Federal laws), including prohibitions and penalties, and e) reporting requirements.

9. Until the exclusion fence is complete, the authorized biologist will conduct preconstruction clearance surveys for desert tortoises within 48 hours prior to the start of any ground-disturbing activity. He/she will follow the guidance in the field manual (Service 2009a) when handling desert tortoises and their eggs during examination, excavating burrows, and constructing artificial burrows. Work area boundaries will be delimited with flagging or other marking to minimize surface disturbance associated with vehicle straying. Project personnel will use previously disturbed areas to the extent feasible. Special habitat features, such as burrows and drinking sites identified by the authorized biologist, will be avoided to the extent possible. Discovered burrows will be checked for desert tortoises and eggs. If desert tortoises or eggs are found, the burrows will be flagged so that equipment operators and drivers will clearly see the flagging and avoid the burrows. Unoccupied burrows will be flagged in a manner that contrasts with occupied burrows.

10. The assigned desert tortoise monitor will ensure desert tortoises are not injured or killed during construction of the fence. If a desert tortoise cannot be avoided during this work, it

will be moved to a safe location outside the project area. When possible, the fence will be placed so that occupied burrows are located outside of the project area.

11. Until construction of the exclusion fence is complete and for vehicles working outside of the fenced area at any time, vehicles or equipment will be inspected for desert tortoises underneath before moving them. If a desert tortoise is encountered, project personnel will contact an authorized biologist. The desert tortoise will be allowed to move a safe distance away on its own accord, prior to moving the vehicle. Alternatively, an authorized biologist or desert tortoise monitor may move the desert tortoise to a safe location to allow for movement of the vehicle.

12. If a desert tortoise requires relocation offsite, only the authorized biologist (or desert tortoise monitor given approval by the authorized biologist) will handle each desert tortoise when necessary. Guidance for relocating desert tortoises in the field manual (Service 2009a) will be followed.

13. After fence installation (within 30 days), the authorized biologist will conduct a 100 percent coverage protocol survey for desert tortoises within the project area. This survey will be conducted during the spring (April and May) or fall (late August through mid-October) at times conducive to desert tortoise activity. All desert tortoises found will be marked and removed from the enclosure outside the nearest fence onto land managed by the Bureau. (Desert tortoises will not be moved onto private land.) Clearance surveys are complete when no additional desert tortoises are detected during two consecutive surveys. The area will be considered cleared of desert tortoises unless a breach in the fence occurs. Guidelines provided by the Service (2009a) pertaining to clearance surveys and procedures for marking, handling, and relocating individuals will be used.

    CES will inspect the desert tortoise exclusion fence (permanent and temporary) during construction and operation of the project on a regular basis sufficient to maintain an effective barrier to movement. Inspections will be documented in writing and include any observations of entrapped animals, repairs needed, desert tortoises, their burrows, and carcasses; and recommendations for supplies and equipment needed to complete repairs and maintenance. Fences will be inspected quarterly and after each significant precipitation event, throughout the life of the project. GPS coordinates of the problem areas, such as those prone to washing out and vandalism will be recorded. All fence repairs will take place within 7 days of detection. If a breach in the fencing last more than 7 days, CES will contact the Bureau immediately; additional clearance surveys of the interior may be required at the discretion of the Bureau, based on the likelihood of desert tortoises entering the facility.

14. Project construction, operation, and maintenance activities will be confined to the project right-of-way and approved access roads. The only exception is to connect the proposed distribution line and fiber-optic line to the existing power lines along Foothill Road. If fence repairs require the use of mechanized equipment or vehicles, all vehicles will access the damaged fence area from within the right-of-way. Only foot traffic will occur outside the

right-of-way to repair fences, to minimize disturbance to desert tortoise habitat. An authorized biologist will accompany any fence repair crews to prevent impacts to desert tortoises. If unforeseen circumstances require disturbance beyond the project right-of-way, CES will notify the Bureau immediately. Except under emergency conditions, any disturbance outside the project right-of-way will not take place until CES receives written authorization from the Bureau.

15. A construction monitoring team, which will include an appropriate number of authorized biologists and desert tortoise monitors, will be present during connection of the distribution line between the solar field and Southern California Edison's existing line and the installation of the entire length of the fiber-optic line. The authorized biologist will ensure that desert tortoises are not injured or killed during this phase of the project by implementing appropriate protective measures, such as conducting a survey directly before activity begins, flagging any burrow or drinking site in the vicinity that potentially could be affected by the activity, and ensuring desert tortoises have not taken shelter underneath vehicles or equipment before moving them.

16. Areas used for stockpiles, vehicle turn-around, service of vehicles, and storage of equipment and material will be restricted to the project right-of-way within the desert tortoise exclusion fence. Leftover excavated material will not be left in place, but will be disposed of in designated areas and in a manner approved by the Bureau.

17. CES will prohibit project personnel from driving off road or performing ground-disturbing activities outside of designated areas during construction, operation, or maintenance, except to deal with emergencies.

18. To reduce the potential for vehicle strikes of desert tortoises on unfenced access roads (i.e., Santa Fe Fire Road and Foothill Road) during construction, CES will temporarily fence them with exclusion fencing prior to the onset of construction. During construction, operation, and maintenance of the proposed project, vehicle speeds will not exceed 20 miles per hour within the right-of-way or on unpaved roads.

19. Firearms and domestic dogs will be prohibited from work areas and the proposed project site.

20. Trash and food items will be disposed of promptly in predator-proof containers with re-sealable lids. Trash containers will be inspected at the end of each work day and will regularly be removed from the project site to reduce the attractiveness of the area to common ravens (*Corvus corax*) and other desert tortoise predators.

21. Encounters with desert tortoises will be immediately reported to the authorized biologist. The authorized biologist will maintain records of all desert tortoises encountered during construction, operation and maintenance activities. Information recorded will include: the location (narrative, vegetation type, and maps); date of observation; location of damaged area of fence, if any; general condition of health and apparent injuries and state of healing; if

moved, location moved from and to and whether the desert tortoise voided its bladder; digital photographs of each handled desert tortoise; and diagnostic markings (i.e., identification numbers, marked lateral scutes).

22. Upon locating injured or dead desert tortoises, CES will notify the Bureau and Service immediately. Written notification will be made within 72 hours of the date and time of finding or incident, and will include location, a photograph, cause of death or injury (if known), and other pertinent information. Carcasses will be left in place (or just outside of the constructed fence or project footprint). Desert tortoises injured through CES activities will be transported to a veterinarian for treatment at the expense of CES and, if the animal recovers, the Service will be contacted to determine its final disposition.

23. During construction, monthly electronic mail reports will be provided to the Bureau. No later than 90 days after completion of construction, the FCR and authorized biologist will prepare a written report for the Bureau and the Service. If the proposed project will take place over the course of 2 or more years, these written reports will be submitted annually, due December 31 of each year of construction. The report will document the effectiveness and practicality of the protective measures, the number of desert tortoises excavated from burrows, moved from the site, and injured or killed, and the specific information for each animal. The report will make recommendations for modifying the stipulations to enhance desert tortoise protection or to make it more workable for the operator. The report will provide an estimate of the actual acreage disturbed by various aspects of the operation and will note any deviations from the approved disturbance footprint, if any.

24. In an emergency, a desert tortoise monitor will evaluate the site and, if required, monitor the activities. If desert tortoises must be handled, an authorized biologist or desert tortoise monitor given approval by the authorized biologist will conduct these activities. If an authorized biologist cannot reach the site in time to conduct the emergency activity, CES personnel may handle the desert tortoise only after specific approval from the Bureau and the Service or CDFG.

25. This measure has been modified from that originally proposed as a result of discussions among the Bureau, Service, and CDFG. To minimize the proposed project's impacts on desert tortoises from increased predation by common ravens, CES will develop a site-specific management plan with the goal of ensuring that the project does not attract common ravens or provide subsidies during all phases of development and use, including construction, operation and maintenance, and decommissioning. This plan will be approved by the Service, Bureau, and CDFG. The management plan will: identify conditions associated with the project that might provide subsidies or attractants to common ravens; describe management practices to avoid or minimize conditions that might increase the numbers and predatory activities of common ravens; describe control practices for common ravens; address monitoring and nest removal during construction and for the life of the project; and discuss reporting requirements. To mitigate for this proposed project's portion of the cumulative and indirect effect of increasing the population of common ravens in the desert

region, a fee will be collected to contribute to an account established with the National Fish and Wildlife Foundation (NFWF) to implement a regional management plan for common ravens that will implement recommendations in the environmental assessment for the reduction of predation by the common raven on the desert tortoise in the California desert (Service 2008c). The account was established by the Bureau, CDFG, Service, Californian Energy Commission, and NFWF to manage the funds that will be used to implement the regional management plan. The environmental assessment identifies several activities to reduce predation by common ravens on desert tortoises, including reduction of human-provided subsidies (e.g., food, water, sheltering and nesting sites), education and outreach, the removal of common ravens and their nests, and evaluation of effectiveness and adaptive management. The fee for cumulative and indirect effects is part of the CDFG requirements for its consistency determination. CES will contribute a one-time fee of $105 per acre of disturbance to 516 acres of desert tortoise habitat affected by this project. This total fee of $54,180 will fund the project's portion of the regional management plan for the 30 year right-of-way grant by the Bureau. The management plan will be complete and payment made prior to any ground-disturbing activities being authorized.

Restoration and Weed Control Plan

CES has submitted a draft plan to the Bureau that provides monitoring, preventative, and management strategies for weed control during construction activities and a long-term strategy for weed control and management during the operation of the project. This plan must be approved by both the Bureau and Service prior to the initiation of any ground-disturbing activity.

1. CES will coordinate with the weed specialist at the Bureau's Barstow Field Office. Only herbicides approved by the Bureau for use on public land will be used (i.e., glyphosate). In areas where solar photovoltaic panels will be placed, the ground will be cleared of vegetation and covered with a soil binder or pea gravel. Herbicide treatment will be conducted in accordance with the weed management plan. This plan stipulates, among other provisions, that only a state and federally certified contractor, approved by the Bureau, will apply herbicides. Additionally, application will be suspended when limiting conditions exist (i.e., excessive wind velocity, snow or ice covers the foliage of weeds, precipitation is occurring or is imminent, and/or air temperatures exceed 90°F).

2. Areas outside the solar panel fields can be spot treated by applying a post-emergent herbicide prior to seed dissemination to manage the seedbank.

3. All herbicide application will end by mid-May and not resume until the following December.

Compensation

The compensation that the Bureau described in the biological assessment has changed as a result of discussions among the agencies since the beginning of consultation. Consequently, the following description represents the current requirements by the Bureau and CDFG (Fesnock 2010).

Both the Bureau and CDFG will require CES to compensate for the loss of habitat. According to the provisions of the amended California Desert Conservation Area Plan (Bureau et al. 2005), the Bureau would require compensation at the rate of one to one. To meet its "fully mitigated" standard under the California Endangered Species Act, the CDFG will require a compensation ratio of two to one. Because the CDFG has agreed to accept the Bureau's one to one ratio as part of its two to one requirement, the total compensation ratio will be two to one.

For the Bureau's portion of the compensation, CES will deposit funds based on the price to acquire land into an account managed by the National Fish and Wildlife Foundation (NFWF); these funds will be used for enhancement of desert tortoise habitat within the Ord-Rodman Desert Wildlife Management Area. Habitat enhancement actions for this project will include some or all of the following: construction of a fence along State Route 247 from Barstow to Lucerne Valley to prevent desert tortoises from entering the roadway, with the primary focus area being Barstow to Stoddard Ridge; signing open routes within Ord-Rodman Desert Wildlife Management Area and visually obscuring routes that have been administratively closed but continue to be used by vehicles; and installation of barrier fencing in the Stoddard Valley area to prevent unauthorized use of the desert wildlife management area. These funds may also be used to support for a headstarting program for desert tortoises that would be developed in coordination with the Service's Desert Tortoise Recovery Office.

The portion of the compensation required by the CDFG will be used to acquire 516 acres of desert tortoise habitat in the Ord-Rodman, Superior-Cronese, or Fremont-Kramer desert wildlife management area. This acquisition can be done by CES and donated to the Bureau or CES can deposit sufficient funds for this acquisition into the NFWF account for the NFWF to then contract the purchase of these lands. The CDFG will also require a long-term management fee for the acquired lands and a long-term maintenance fee for the habitat enhancement projects that would be implemented on lands managed by the Bureau. The amount of these fees will be determined using a property analysis record-type evaluation (Center for Natural Lands Management 2010).

ANALYTICAL FRAMEWORK FOR THE JEOPARDY DETERMINATION

Section 7(a)(2) of the Endangered Species Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. "Jeopardize the continued existence of" means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 Code of Federal Regulations 402.02).

The jeopardy analysis in this biological opinion relies on four components: (1) the Status of the Species, which describes the range-wide condition of the desert tortoise, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which analyzes the condition of the desert tortoise in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the desert tortoise; (3) the Effects of the Action, which determine the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the desert tortoise; and (4) the Cumulative Effects, which evaluate the effects of future, non-Federal activities in the action area on the desert tortoise.

In accordance with policy and regulation, we determine whether the proposed action may result in jeopardy to the species by evaluating the effects of the proposed federal action in the context of the current status of the desert tortoise, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both its survival and recovery in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the desert tortoise and the role of the action area in its survival and recovery as the context for evaluation of the significance of the effects of the proposed federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

STATUS OF THE SPECIES

Basic Ecology of the Desert Tortoise

The desert tortoise is a large, herbivorous reptile found in portions of the California, Arizona, Nevada, and Utah deserts. It also occurs in Sonora and Sinaloa, Mexico. In California, the desert tortoise occurs primarily within the Creosote, Shadscale, and Joshua Tree Series of Mojave Desert Scrub, and the Lower Colorado River Valley subdivision of Sonoran Desert Scrub. Optimal habitat has been characterized as creosote bush scrub in areas where precipitation ranges from 2 to 8 inches, diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982, Turner and Brown 1982, Schamberger and Turner 1986). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. In California, desert tortoises are typically associated with gravelly flats or sandy soils with some clay, but are occasionally occur in windblown sand or in rocky terrain (Luckenbach 1982). Desert tortoises occur in the California desert from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982, Schamberger and Turner 1986). Recent range-wide monitoring efforts have consistently documented desert tortoises above 3,000 feet (Service 2006a).

Desert tortoises may spend more time in washes than in flat areas outside of washes; Jennings (1997) notes that, between March 1 and April 30, desert tortoises “spent a disproportionately longer time within hill and washlet strata” and, from May 1 through May 31, hills, washlets, and washes “continued to be important.” Jennings’ paper does not differentiate between the time desert tortoises spent in hilly areas versus washes and washlets; however, he notes that, although washes and washlets comprised only 10.3 percent of the study area, more than 25 percent of the plant species on which desert tortoises fed were located in these areas. Luckenbach (1982) states that the "banks and berms of washes are preferred places for burrows;" he also recounts an incident in which 15 desert tortoises along 0.12 mile of wash were killed by a flash flood. Desert tortoises are most active in California during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rain storms. Desert tortoises spend most of their time during the remainder of the year in burrows, escaping the extreme conditions of the desert; however, recent work has demonstrated that they can be active at any time of the year. Further information on the range, biology, and ecology of the desert tortoise can be found in Burge (1978), Burge and Bradley (1976), Hovik and Hardenbrook (1989), Luckenbach (1982), Weinstein et al. (1987), and Service (1994).

Food resources for desert tortoises are dependent on the availability and nutritional quality of annual and perennial vegetation, which is greatly influenced by climatic factors, such as the timing and amount of rainfall, temperatures, and wind (Beatley 1969, 1974, Congdon 1989, Karasov 1989, Polis 1991; all in Avery 1998). In the Mojave Desert, these climatic factors are typically highly variable; this variability can limit the desert tortoise's food resources.

Desert tortoises will eat many species of plants. However, at any time, most of their diet consists of a few species (Nagy and Medica 1986 and Jennings 1993 in Avery 1998). Additionally, their preferences can change during the course of a season (Avery 1998) and over several seasons (Esque 1994 in Avery 1998). Possible reasons for desert tortoises to alter their preferences may include changes in nutrient concentrations in plant species, the availability of plants, and the nutrient requirements of individual animals (Avery 1998). In Avery's (1998) study in the Ivanpah Valley, desert tortoises consumed primarily green annual plants in spring; they ate cacti and herbaceous perennials once the winter annuals began to disappear. Medica et al. (1982 in Avery 1998) found that desert tortoises ate increased amounts of green perennial grass when winter annuals were sparse or unavailable; Avery (1998) found that desert tortoises rarely ate perennial grasses.

Desert tortoises can produce from one to three clutches of eggs per year. On rare occasions, clutches can contain up to 15 eggs; most clutches contain 3 to 7 eggs. Desert tortoises generally lay eggs from mid-May to early July, but occasionally as late as October (Ernst et al. 1994). The eggs typically hatch from late August through early October. At the time of hatching, the desert tortoise has a substantial yolk sac; the yolk can sustain them through the fall and winter months until forage is available in the late winter or early spring. However, neonates will eat if food is available to them at the time of hatching; when food is available, they can reduce their reliance on the yolk sac to conserve this source of nutrition. Neonate desert tortoises use abandoned rodent burrows for daily and winter shelter; these burrows are often shallowly excavated and run parallel to the surface of the ground.

Neonate desert tortoises emerge from their winter burrows as early as late January to take advantage of freshly germinating annual plants; if appropriate temperatures and rainfall are present, at least some plants will continue to germinate later in the spring. Freshly germinating plants and plant species that remain small throughout their phenological development are important to neonate desert tortoises because their size prohibits access to taller plants. As plants grow taller during the spring, some species become inaccessible to small desert tortoises.

Neonate and juvenile desert tortoises require approximately 12 to 16 percent protein content in their diet for proper growth. Desert tortoises, both juveniles and adults, seem to selectively forage for particular species of plants with favorable ratios of water, nitrogen (protein), and potassium. The potassium excretion potential model (Oftedal 2001) predicts that, at favorable ratios, the water and nitrogen allow desert tortoises to excrete high concentrations of potentially toxic potassium, which is abundant in many desert plants. Oftedal (2001) also reports that variation in rainfall and temperatures cause the potassium excretion potential index to change annually and during the course of a plant's growing season. Therefore, the changing nutritive quality of plants, combined with their increase in size, further limits the forage available to small desert tortoises to sustain their survival and growth.

Bjurlin and Bissonette (2004) determined that 74 percent of desert tortoise nests survived and, over 2 years, 84 and 91 percent of the neonates survived the initial period of post-hatching dispersal. They predicted that 40 percent of eggs produce hatchlings that survive to hibernation at their study site. We do not have sufficient information on the demography of the desert tortoise to determine whether this rate is sufficient to maintain viable populations; however, it does indicate that maintaining favorable habitat conditions for small desert tortoises is crucial for the continued viability of the species.

In summary, the ecological requirements and behavior of neonate and juvenile desert tortoises are substantially different from those of subadults and adults. Smaller desert tortoises use abandoned rodent burrows, which are typically more fragile than the larger ones constructed by adults. They are active earlier in the season. Finally, small desert tortoises rely on smaller annual plants with greater protein content; the smaller plant size allows them to gain access to food and the higher protein content promotes growth.

Status of the Desert Tortoise

On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 *Federal Register* 32326). In its final rule, dated April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 *Federal Register* 12178). The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California (55 *Federal Register* 12178). All of the following discussions refer to the Mojave population.

The Service listed the desert tortoise in response to loss and degradation of habitat caused by numerous human activities including urbanization, agricultural development, military training, recreational use, mining, and livestock grazing. The loss of individual desert tortoises to increased predation by common ravens, collection by humans for pets or consumption, collisions with vehicles on paved and unpaved roads, and mortality resulting from diseases also contributed to the Service's listing of this species.

Recovery Plan for the Desert Tortoise

The recovery plan for the desert tortoise (Service 1994) is the basis and key strategy for recovery and delisting of the desert tortoise. The recovery plan divides the range of the desert tortoise into 6 distinct population segments or recovery units and recommends the establishment of 14 desert wildlife management areas throughout the recovery units. Within each desert wildlife management area, the recovery plan recommends implementation of reserve level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The recovery plan also recommends that desert wildlife management areas be designed to follow the accepted concepts of reserve design and be managed to restrict human activities that negatively affect desert tortoises. The delisting criteria established by the recovery plan are:

1. The population within a recovery unit must exhibit a statistically significant upward trend or remain stationary for at least 25 years;

2. Enough habitat must be protected within a recovery unit or the habitat and desert tortoises must be managed intensively enough to ensure long-term viability;

3. Populations of desert tortoises within each recovery unit must be managed so discrete population growth rates (lambdas) are maintained at or above 1.0;

4. Regulatory mechanisms or land management commitments that provide for long-term protection of desert tortoises and their habitat must be implemented; and

5. The population of the recovery unit is unlikely to need protection under the Endangered Species Act in the foreseeable future.

The recovery plan based its descriptions of the six recovery units on differences in genetics, morphology, behavior, ecology, and habitat use over the range of the Mojave population of the desert tortoise. The recovery plan contains generalized descriptions of the variations in habitat parameters of the recovery units and the behavior and ecology of the desert tortoises that reside in these areas (pages 20 to 22 in Service 1994). The recovery plan (pages 24 to 26 from Service 1994) describes the characteristics of desert tortoises and variances in their habitat, foods, burrow sites, and phenotypes across the range of the listed taxon. Consequently, to capture the full range of phenotypes, use of habitat, and range of behavior of the desert tortoise as a species, conservation of the species across its entire range is essential.

In 2003, the Service established the Desert Tortoise Recovery Plan Assessment Committee, which was composed of scientists familiar with the desert tortoise and other disciplines relevant to the conservation of this species, to assess whether the 1994 recovery plan needed to be revised; the group concluded that the recovery plan was "fundamentally strong but could benefit substantially from modification" by recognition of new patterns of diversity within the Mojave population of the desert tortoise, explicit implementation of the prescriptions in the original recovery plan, greater appreciation of the implications of multiple, simultaneous threats facing desert tortoise populations, and applying recent advances in analytical techniques to desert tortoise recovery (Tracey et al. 2004). As a result of these recommendations, the Service has released a draft revised recovery plan for public review (Service 2008b). The draft revised recovery plan includes discussions of reducing the number of recovery units to five based on information that has been generated since the release of the original document and of the other recommendations contained in the assessment.

Relationship of Recovery Units, Evolutionary Distinct Populations, Desert Wildlife Management Areas, Critical Habitat Units, and Areas of Critical Environmental Concern

The recovery plan for the desert tortoise defines a "recovery unit" as "a geographic area harboring an evolutionarily distinct population of the desert tortoise" (Service 1994). Over the years, workers have commonly used the term "recovery unit" in reference to these geographic areas defined in the recovery plan; the term "evolutionarily distinct population" has not been in common use.

The recovery plan (Service 1994) recognized six recovery units or evolutionarily significant units across the range of the listed taxon, based on differences in genetics, morphology, behavior, ecology, and habitat use of the desert tortoises found in these areas. The boundaries between these areas are vaguely defined. In some cases, such as where the Western Mojave Recovery Unit borders the Eastern Mojave Recovery Unit, a long, low-lying, arid valley provides a fairly substantial separation of recovery units. In other areas, such as where the Eastern Mojave Recovery Unit borders the Northern Colorado Recovery Unit, little natural separation exists. Because of the vague boundaries, the acreage of the recovery units has not been quantified.

The recovery plan recommended that land management agencies establish one or more desert wildlife management areas within each recovery unit. The recovery plan recommended that these areas receive reserve-level management to remove or mitigate the effects of the human activities responsible for declines in the number of desert tortoises. As was the case for the recovery units, the recovery plan did not determine precise boundaries for the desert wildlife management areas; the recovery team intended for land management agencies to establish these boundaries, based on the site-specific needs of the desert tortoise. At this time, desert wildlife management areas have been established throughout the range of the desert tortoise.

Based on the recommendations contained in the draft recovery plan for the desert tortoise, the Service designated critical habitat throughout the range of the desert tortoise (59 *Federal Register* 5820). The 14 critical habitat units have defined boundaries and cover specific areas throughout the 6 recovery units. (The proposed action will not affect critical habitat; it is located approximately 9 miles south of the nearest unit of critical habitat of the desert tortoise.)

The Bureau used the boundaries of the critical habitat units and other considerations, such as conflicts in management objectives and more current information, to propose and designate desert wildlife management areas through its land use planning processes. In California, the Bureau also classified these desert wildlife management areas as areas of critical environmental concern, which allows the Bureau to establish management goals for specific resources in defined areas. Through the land use planning process, the Bureau established firm boundaries for the desert wildlife management areas.

Finally, we note that the Department of Defense installations and National Park Service units in the California desert did not establish desert wildlife management areas on their lands. Where the military mission is compatible with management of desert tortoises and their habitat, the Department of Defense has worked with the Service to conserve desert tortoises and their habitat. Examples of such overlap include the bombing ranges on the Navy's Mojave B and the Chocolate Mountains Aerial Gunnery Ranges; although the target areas are heavily disturbed, most of the surrounding land remains undisturbed. Additionally, the Army has established several areas along the boundaries of Fort Irwin where training with vehicles is prohibited; desert tortoises persist in these areas, which are contiguous with lands off-base. The National Park Service did not establish desert wildlife management areas within the Mojave National Preserve, because the entire preserve is managed at a level that is generally consistent with the spirit and intent of the recovery plan for the desert tortoise.

Methods of Estimating the Number of Desert Tortoises

Before entering into a discussion of the status and trends of the desert tortoise in the Western Mojave Recovery Unit where the proposed action is located, a brief discussion of the methods of estimating the numbers of desert tortoises would be useful. Three primary methods have been widely used: permanent study plots, triangular transects, and line distance sampling.

Generally, permanent study plots are defined areas that are visited at roughly 4-year intervals to determine the numbers of desert tortoises present. Desert tortoises found on these plots during the spring surveys were registered; that is, they were marked so they could be identified individually during subsequent surveys. Between 1971 and 1980, 27 plots were established in California to study the desert tortoise; 15 of these plots were used by the Bureau to monitor desert tortoises on a long-term basis (Berry 1999). Range-wide, 49 plots have been used at one time or another to attempt to monitor desert tortoises (Tracy et al. 2004).

Triangular transects are used to detect sign (i.e., scat, burrows, footprints, etc.) of desert tortoises. The number of sign is then correlated with standard reference sites, such as permanent study plots, to allow workers to estimate the relative abundance of desert tortoises.

The third methodology, line distance sampling, involves walking transects while trying to detect live desert tortoises. Based on the distance of the desert tortoise from the centerline of the transect, the length of the transect, and a calculation of what percentage of the animals in the area were likely to have been above ground and visible to surveyors during the time the transect was walked, an estimation of the density can be made. This density only represents an estimation of the number of desert tortoises that are greater than 180 millimeters (approximately 7 inches) in size, because desert tortoises that are smaller than this size are difficult to detect. Desert tortoises that are larger than this size are typically classified as subadult or adult desert tortoises.

Each of these methods has various strengths and weaknesses. In general, permanent study plots have been used to estimate the status of desert tortoises across large areas over time. Triangular transects were used to assess the density of desert tortoises on specific sites at a point in time; this method was commonly used to determine how many desert tortoises may be affected by a specific proposed action. In 2001, the Service initiated line distance sampling to estimate the density of desert tortoises in desert wildlife management areas and critical habitat throughout the range.

Tracy et al. (2004) acknowledged, in its assessment of the recovery plan, that determining the number of desert tortoises over large areas is extremely difficult. Desert tortoises spend much of their lives underground or concealed under shrubs, are not very active in years of low rainfall, and are distributed over a wide area in several different types of habitat. Other factors, such as the inability to sample on private lands and rugged terrain, further complicate sampling efforts. Consequently, the topic of determining the best way to estimate the abundance of desert tortoises has generated many discussions over the years. As a result of this difficulty, estimations of the density of desert tortoises in each recovery unit or desert wildlife management area often reflect inconsistencies in the way in which data were gathered.

Given the difficulty in determining the density of desert tortoises over large areas, the differences in density estimates in the recovery plan and those derived from subsequent sampling efforts may not accurately reflect on-the-ground conditions. However, the absence of live desert tortoises and the presence of carcasses over large areas of some desert wildlife management areas provide an indication that desert tortoise populations seem to be in a downward trend in some regions.

Status and Trends of Desert Tortoise Population in the Western Mojave Recovery Unit

The following paragraphs provide general information on the status and trends of the desert tortoise population in the Western Mojave Recovery Unit, where the proposed action is located. Our determination regarding whether a proposed action is likely to jeopardize the continued existence of a species is conducted at the level of the listed taxon. When the range of the listed taxon is divided into recovery units, as with the desert tortoise, our level of analysis begins with the affected recovery unit; if the effects of the proposed action have the potential to compromise the ability of the species to survive and recover within the recovery unit, the next level of analysis considers how the compromised recovery unit would affect the listed taxon throughout its range (Service 2005). Our analysis is conducted in a comprehensive manner through an iterative process. The Western Mojave Mojave Recovery Unit comprises one of six recovery units for the desert tortoise; consequently, our level of analysis in this biological opinion will begin at this level.

In the Western Mojave Recovery Unit, desert tortoises generally occur from Olancha and the northern Panamint Valley in the north to Joshua Tree National Park in the south and from the lower foothills of the southern Sierra Nevada and Tehachapi Mountains in the west east to Death Valley and the eastern side of Joshua Tree National Park. Although desert tortoises were historically widespread in the western Mojave Desert, their distribution within this region was not uniform. For example, desert tortoises likely occurred at low densities in the juniper woodlands of the western Antelope Valley and in the sandier habitats in the Mojave River valley. They were also likely largely absent from the higher elevations of the area's mountains and from playas and the areas immediately surrounding these dry lakes.

In the following paragraphs, we present information regarding the status of the desert tortoise in areas of the Western Mojave Recovery Unit that are outside of critical habitat and desert wildlife management areas. Most of these areas are at the range limits of the species or are near areas that have undergone extensive habitat disturbance as a result of human activities. Much of this area is privately owned.

We do not have extensive data on the density or status of desert tortoises in the areas of the Western Mojave Recovery Unit that lie outside of critical habitat and desert wildlife management areas. The lack of data may be because at least some of this area had been extensively disturbed prior to the listing of the desert tortoise and includes large amounts of private land; consequently, researchers have not conducted large-scale surveys in most of these areas. Where data do exist (e.g., a Bureau study of desert tortoise density west of Highway 14 between Red Rock Canyon State Park and Highway 178 (Keith et al. 2005); various surveys of the eastern Antelope Valley, Victor Valley, and near the town of Rosamond), they were collected using methods other than line distance sampling and are not comparable to the numbers obtained through the line distance sampling. Much of the information in the following paragraphs was gathered from these sources; additionally, we used anecdotal information as a partial basis for the following discussion and conclusions reached by the Service (e.g., "I saw desert tortoises all the time here when I was young but have not seen one in the last 15 years"). Finally, based on the information in the Service's report on line distance sampling conducted between 2001 and 2005 and several assumptions with regard to the amount of suitable habitat, the Service (2007) estimated that approximately 6,216 desert tortoises resided outside of desert wildlife management areas and critical habitat in the Western Mojave Recovery Unit.

Desert tortoises occur over large areas of Fort Irwin where the Army conducts realistic, large-scale exercises with large numbers of wheeled and tracked vehicles. The distribution and abundance of the desert tortoise within the boundary of Fort Irwin have been greatly affected by military exercises. They have been essentially eliminated from most of the valleys and bajadas where vehicles frequently travel off road. They persist in small numbers on the steep, rugged slopes of the mountain ranges and in incised washes that occur throughout Fort Irwin where they are protected from vehicles by the terrain.

We do not have specific information on the numbers of desert tortoises in these areas. We expect that desert tortoises that reside away from the most active training areas will persist long into the future as small aggregations of animals that are likely isolated from desert tortoises in the remainder of the Western Mojave Recovery Unit; some exchange may occur with desert tortoises in the South Range portion of the Naval Air Weapons Station to the west of Fort Irwin and a narrow strip of Bureau lands and Death Valley National Park to the north.

Because of the Army's proposal to expand the area that is available for training at Fort Irwin, the Service and Army concluded formal consultation (Service 2004) that resulted in an agreement to remove all desert tortoises from the areas of the base south of the UTM 90 line (i.e., the southern expansion area) and in the Superior Valley (i.e., the western expansion area). To date, 569 desert tortoises of all class sizes have been translocated from the southern expansion area (Army 2009). Eighty-nine desert tortoises of all class sizes remain to be translocated. Therefore, 658 desert tortoises of all class sizes have been detected in the southern expansion area. Walde et al. (2009 in Army 2009) estimate between 583 and 895 (95 percent confidence interval) desert tortoises occupy the western expansion area; this estimate is based on transects conducted in 2009. This estimate reflects the number of adult desert tortoises; consequently, the total number of animals within the southern and western expansion areas is likely somewhat greater.

The Naval Air Weapons Station, China Lake, is divided into two large units. The southern unit lies to the west of Fort Irwin and north of the western expansion area; the northern portion of the Naval Air Weapons Station lies to the northwest of the southern unit. The Department of the Navy (Navy) has designated approximately 200,000 acres of the South Range at the Naval Air Weapons Station, China Lake as a management area for the desert tortoise (Service 1995). Through a consultation with the Service (1992), the Navy agreed to try to direct most ground-disturbing activities outside of this area, to use previously disturbed areas for these activities when possible, and to implement measures to reduce the effects of any action on desert tortoises. This area also encompasses the Superior Valley Tactical Bombing Range located in the southernmost portion of the Mojave B South land management unit of the Naval Air Weapons Station; it continues to be used as an active bombing range for military test and training operations by the Navy and Department of Defense. In the 9 years for which we had annual reports, activities conducted by the Navy did not kill or injure any desert tortoises (see Navy 1995); one carcass was found at a bombing site but the cause of mortality could not be determined. In general, desert tortoises occur in low densities on the North Range of the Naval Air Weapons Station; Kiva Biological Consulting and McClenahan and Hopkins Associates (in Service 1992) reported that approximately 136 square miles of the North Range supported densities of 20 or fewer desert tortoises per square mile. The South Range supported densities of 20 or fewer desert tortoises per square mile over an area of approximately 189 square miles and densities of greater than 20 per square mile on approximately 30 square miles. The higher elevations and latitude in this area may be responsible for these generally low densities (Weinstein 1989 in Bureau et al. 2005).

The Indian Wells Valley, which is located to the southwest of the northern portion of the Naval Air Weapons Station, likely supported desert tortoises at higher densities in the past. Urban, suburban, and agricultural development is the likely cause of the lower densities that are currently found in this area; the city of Ridgecrest and town of Inyokern are located in this valley. Rose Valley, which lies generally to the north of the Indian Wells Valley and west of the northern portion of the Naval Air Weapons Station seems to support few desert tortoises and is likely the northern extent of the species' range in this portion of the Western Mojave Recovery Unit.

Edwards Air Force Base, which lies in the eastern portion of the Antelope Valley, is used primarily to test aircraft and weapons systems used by the Department of Defense. Desert tortoises occur over approximately 220,800 acres of the installation. Approximately 80,640 acres of the base have been developed for military uses or are naturally unsuitable for use by desert tortoises, such as Rogers and Rosamond dry lakes. Based on surveys conducted between 1991 and 1994, approximately 160,640 acres of the base supported 20 or fewer desert tortoises per square mile. Approximately 55,040 acres supported densities between 21 and 50 desert tortoises per square mile; from 51 to 69 desert tortoises per square mile occurred on several smaller areas that totaled 5,120 acres (U.S. Air Force 2004). We expect that current densities are somewhat lower, given the regional declines in desert tortoise numbers elsewhere in the Western Mojave Recovery Unit.

Four townships of private land east of the city of California City, north of Edwards Air Force Base, and south of the Rand Mountains supported large numbers of desert tortoises as late as the 1970s. High levels of off-road vehicle use, extensive grazing of sheep, scattered development, and possibly poaching have greatly reduced the density of desert tortoises in this area.

South of Edwards Air Force Base, the direct and indirect effects of urban and suburban development have largely eliminated desert tortoises from this area of primarily private lands that extends from Lancaster in the west to Lucerne Valley in the east. A few desert tortoises remain on the northern slopes of the San Bernardino Mountains, south of Lucerne Valley; however, they seem to be largely absent from the portion of this area in Los Angeles County (Bureau et al. 2005). The Bureau manages the 24,000-acre El Mirage Off-highway Vehicle Management Area, which lies south of the eastern portion of Edwards Air Force Base; the Bureau has designated this and three other off-highway vehicle management areas in the western Mojave Desert for use by off-road vehicles. Low numbers of desert tortoises persist in the area that generally lies between the off-highway vehicle management area and Edwards Air Force Base.

Continuing to the east, the northern portion of Joshua Tree National Park is within the Western Mojave Recovery Unit. Given the general patterns of visitor use at Joshua Tree National Park (i.e., most visitors remain fairly close to established roads and trails), we expect that most of this area receives little visitor use. Private lands between the northern boundary of Joshua Tree National Park and the southern boundary of the Marine Corps Air Ground Combat Center continue to support desert tortoises; the primary threat to desert tortoises in this area is urbanization. The cities of Twentynine Palms, Yucca Valley, Joshua Tree, and Morongo Valley are located in this area.

The Marine Corps Air Ground Combat Center is located north of the cities mentioned in the previous sentence and southeast of Barstow; the center generally supports a wide variety of training exercises that include the use of tracked and wheeled vehicles and live fire. The Marine Corps' integrated natural resource management plan for the center notes that the number of desert tortoises may have declined in its more heavily disturbed areas and that vehicles, common ravens, and dogs are responsible for mortalities (Natural Resources and Environmental Affairs Division 2001). Desert tortoises occur within the Marine Corps Air Ground Combat Center in densities of greater than 50 per square mile in limited areas; most of the installation, however, supports from 0 to 5 animals per square mile (Jones and Stokes Associates 1998 in Natural Resources and Environmental Affairs Division 2001).

The 189,000-acre Johnson Valley Off-highway Vehicle Management Area lies to the west of the Marine Corps Air Ground Combat Center. The Stoddard Valley Off-highway Vehicle Management Area lies to the west of the Johnson Valley Off-highway Vehicle Management Area. Desert tortoises remain in suitable habitat in these areas, primarily in the portions that are less heavily used for recreation.

The Mojave River valley lies to the northwest of the Marine Corps Air Ground Combat Center. It is generally a low-lying area with current and fallow agricultural use; private lands dominate this area. We are aware of a few records of desert tortoises in this area, primarily in creosote scrub habitat near the Marine Corps Logistics Base, Nebo, and around Elephant Mountain, which lie at the western end of the valley.

The city of Barstow lies at the western end of the Mojave River valley. A large expanse of primarily private land lies between Barstow and the city of Victorville. This area, which is subjected to heavy unauthorized use by off-road vehicles, likely supported high densities of desert tortoises prior to the development of surrounding areas. The cities of Adelanto, Apple Valley, and Hesperia and the Southern California Logistics Airport generally surround Victorville.

Death Valley National Park lies to the north of Fort Irwin. Desert tortoises are uncommon in the national park, primarily because much of the habitat lies either lower or higher than optimal elevations for the species; Greenwater Valley, to the east of Death Valley, seems to support a moderate number of desert tortoises. Panamint Valley lies to the west of Death Valley and east of the northern section of the Naval Air Weapons Station. It supports low densities of desert tortoises, likely because of unsuitable habitat over large areas of the valley.

The Spangler Hills Off-highway Vehicle Management Area lies to the southwest of the Panamint Valley and southeast of Ridgecrest. We do not have recent information on the number of desert tortoises in this area; we expect that the area supports low densities as a result of extensive recreational use.

Major roads include Interstates 15 and 40 and State Routes 14, 18, 58, 62, 127, 138, 178, 247, and 395. These roads fragment habitat; vehicles using these roads strike and kill numerous desert tortoises every year. Portions of Interstate 15 and Routes 58 and 395 are fenced to prevent entry by desert tortoises. Smaller paved roads and unpaved roads probably do not fragment habitat to a substantial degree but are responsible for additional mortalities of desert tortoises.

The following paragraphs describe efforts to define the density of desert tortoises in and near critical habitat and desert wildlife management areas in the Western Mojave Recovery Unit. The Pinto Mountains Desert Wildlife Management Area is located in the southeastern portion of the Western Mojave Recovery Unit, generally to the southeast of the Marine Corps Air Ground Combat Center and abutting the northeastern portion of Joshua Tree National Park. No permanent study plots are located in this desert wildlife management area. Tracy et al. (2004) noted that the distribution of carcasses and live desert tortoises appeared to be what one would expect in a "normal" population of desert tortoises; that is, carcasses occurred in the same areas as live animals and were not found in extensive areas in the absence of live desert tortoises. Through line distance sampling, the Service estimated the density of desert tortoises in this desert wildlife management area to be approximately 6.2 subadults and adults per square mile in 2007 (Service 2009).

The Ord-Rodman Desert Wildlife Management Area is located to the southeast of the city of Barstow, north of the Johnson Valley Off-highway Vehicle Management Area, and west of the Marine Corps Air Ground Combat Center. The recovery plan notes that the estimated density of desert tortoises in this area is 5 to 150 animals per square mile (Service 1994). Three permanent study plots are located within and near this desert wildlife management area. The following table contains the density estimates for these plots; the data are from Berry (1996); all data are in the approximate number of desert tortoises of all sizes per square mile.

	Stoddard Valley	**Lucerne Valley**	**Johnson Valley**
1980		176	114
1981	146		
1986		150	80
1987	178		
1990		82	18
1991	225		
1994		73	73

Berry (1996) notes that, for various reasons, surveys at the Stoddard Valley plot encountered various difficulties; some desert tortoises from this plot were taken by poachers and at least one animal became ill with upper respiratory tract disease and contained environmental contaminants. Common ravens and feral dogs have killed desert tortoises at the Lucerne Valley plot; Berry (1996) notes that little recruitment into adult size classes was occurring. Berry also notes that at least two desert tortoises from the Johnson Valley plot were killed by off-road vehicle use or cattle; at least one ill and salvaged animal contained environmental contaminants. Through line distance sampling, the Service estimated the density of desert tortoises in this desert wildlife management area to be approximately 21.3 subadults and adults per square mile in 2007 (Service 2009). Note that, for all desert wildlife management areas, the densities estimated by different methods are not directly comparable; i.e., the differences in numbers depicted in Berry (1996) and Service (2009b) do not necessarily represent a specific change in the density of desert tortoises in the area. For example, the information from study plots may reflect changes in the density of desert tortoises in those specific areas over time, while line distance sampling provides information regarding the density of the entire desert wildlife management area.

The Superior-Cronese Desert Wildlife Management Area is located north of the Ord-Rodman Desert Wildlife Management Area; two interstate freeways and rural, urban, and agricultural development separate them. This desert wildlife management area is located south of Fort Irwin and the southern portion of the Naval Air Weapons Station, China Lake. No permanent study plots have been established in this area; the density of desert tortoises has been estimated through numerous triangular transects and line distance sampling efforts. The recovery plan notes that this desert wildlife management area supports densities of approximately 20 to 250 desert tortoises per square mile (Service 1994). Through line distance sampling, the Service estimated the density of desert tortoises in this desert wildlife management area to be approximately 16.4 subadults and adults per square mile in 2007 (Service 2009b).

The Fremont-Kramer Desert Wildlife Management Area is located west of the Superior-Cronese Desert Wildlife Management Area; the two desert wildlife management areas are contiguous. The recovery plan notes that the estimated density of desert tortoises in this area was 5 to 100 animals per square mile (Service 1994). Five permanent study plots are located within this desert wildlife management area; one plot, the Interpretive Center plot at the Desert Tortoise Natural Area, is split into two subplots. The following table contains the density estimates for these plots; the data are from Berry (1996); all data are in the approximate number of desert tortoises of all sizes per square mile.

	Fremont Valley	**Desert Tortoise Natural Area, Interior**	**Desert Tortoise Natural Area, Interpretive Center**		**Fremont Peak**	**Kramer Hills**
			Inside Fence	**Outside Fence**		
1979		387	339	296		
1980					99	223
1981	278					
1982		332				314
1985			229	134	45	
1987	179					130
1988		195				
1989			106	80	32	
1991	101					60
1992		47				

1993			61	42	8	
1995						139
1996		18				
1997		8*	34#	23#		
2001	19*					
2002			28#	10#		

* These values represent the actual numbers of desert tortoises found on the plot and do not represent a density estimate; the data are from Berry (pers. comm. 2005).
# These data are from Connor (2003).

Berry (1996) noted that the overall trend in this desert wildlife management area is "a steep, downward decline" and lists predation by common ravens and domestic dogs, off-road vehicle activity, illegal collecting, upper respiratory tract disease, and environmental contaminants as contributing factors. Through line distance sampling, the Service estimated the density of desert tortoises in this desert wildlife management area to be approximately 7.0 subadults and adults per square mile in 2007 (Service 2009b).

We estimate that the overall density of desert tortoises in critical habitat and desert wildlife management areas in the Western Mojave Recovery Unit is approximately 12.2 subadults and adults per square mile (Service 2009b). The 95 percent confidence intervals for this estimate range from approximately 7.8 to 22.1 subadults and adults per square mile (Service 2009b).

By multiplying the approximate area of desert tortoise habitat in the Western Mojave Recovery Unit by the average density of 12.2 subadults and adult desert tortoises per square mile, we estimate that approximately 125,855 subadult and adult desert tortoises may reside within the recovery unit. (To estimate of the area of desert tortoise habitat within the Western Mojave Recovery Unit, we used a model developed by Nussear et al. [2009], which is based on desert tortoise habitat across the range of the species. The Nussear et al. model does not consider habitat loss, fragmentation, or degradation associated with human-caused impacts; however, it provides a reference point relative to the amount of desert tortoise habitat. We then used urbanized areas cartographic boundary files (Census Bureau 2000) to estimate the portion of modeled habitat that has been lost as a result of human activities; this model depicts areas where human activity has caused substantial ground disturbance [i.e., urbanization, agriculture, and military training]. By subtracting the amount of area no longer considered suitable habitat [i.e., the census data] from the area of potential habitat [i.e., from the Nussear et al. model], we estimate that the Western Mojave Recovery Unit contains approximately 10,316 square miles of potential desert tortoise habitat [Waln 2010]. The Nussear et al. model does not account for habitat disturbance and variations caused by other factors that affect the density of desert tortoises [e.g., highways]. Additionally, the data from line distance sampling were collected in desert wildlife management areas, where, presumably, the density of desert tortoises is greater than in other portions of the Western Mojave Recovery Unit; however, we applied this density for the entire Western Mojave Recovery Unit. Consequently, we recognize that the number of subadult and adult desert tortoises in the Western Mojave Recovery Unit we provide here may be an overestimate.)

Using the same methodologies, we estimated that approximately 56,544 to 130,992 juvenile desert tortoises (i.e., smaller than 180 millimeters) reside within the Western Mojave Recovery Unit. This estimate is based on the assumption 125,855 subadults and adults occur in the Western Mojave Recovery Unit and that 31 to 51 percent of the total population of desert tortoises in the recovery unit are juveniles (Turner et al. 1987).

The biological opinion for the Bureau's amendment to the California Desert Conservation Area Plan for the western Mojave Desert (Service 2006b) contains a description of the results of studies done on permanent plots in the Western Mojave Recovery Unit. Based on this work, the Desert Tortoise Recovery Plan Assessment Committee (Tracy et al. 2004) concluded that the population densities of adult desert tortoises in the Western Mojave Recovery Unit exhibited a significant downward trend ($P < 0.0001$) from approximately 1975 through 2000. Some of the permanent study plots are located outside of the desert wildlife management areas; therefore, the trends within and outside of desert wildlife management areas may not be precisely the same. However, data from the permanent study plots provide the only long-term assessment of the status of the desert tortoise in this area.

Fires

Since December 2004, numerous wildfires have occurred in desert tortoise habitat across its range. Although we know that some desert tortoises were killed by the wildfires, mortality estimates are not available. We estimate that approximately 300,000 acres of potential desert tortoise habitat burned in the Northeastern Mojave Recovery unit in 2005 (Burroughs 2005). This acreage includes approximately 109,000 acres of critical habitat (Clayton 2005). In total, approximately 136,447 acres of critical habitat burned in the 2005 fires (Clayton 2005). The fires adversely affected the status of the desert tortoise by reducing the number of individuals (i.e., desert tortoises killed by the fire), possibly by reducing reproductive rates (i.e., desert tortoises in burned areas may have lower reproductive rates because of the decreased value of the habitat), and by degrading a portion of the habitat available to the species.

ENVIRONMENTAL BASELINE

Action Area

The implementing regulations for section 7(a)(2) of the Act define the "action area" as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). For the purposes of this biological opinion, we consider the action area to include the 516-acre project footprint, the public lands adjacent to the project site extending to 2,200 feet from the project area's boundary, Santa Fe Fire Road where it provides access to the site, the small area across Foothill Road that CES will need to access to connect the facility to the existing distribution line, and the area along the existing distribution line where Verizon would install a fiber-optic line from the site to State Highway 247. By including the area of public lands extending to 2,200 feet from the edge of the project site, we are including areas that desert tortoises are likely to move within following relocation, based on home range estimates (Harless et al. 2009). The action area defined for this biological opinion is approximately 724 acres; we did not include the area where the fiber-optic line would be installed on the existing power poles in this figure because this portion of the project is linear and would not result in any ground disturbance or long-term effects. We are not including the water source or roads that project-related vehicles may use (other than Santa Fe Fire Road) in the action area because existing uses of these areas would likely mask any effects of the CES project in those areas.

Habitat Characteristics of the Action Area

The proposed project site is located on Bureau land. Land to the east of the site is also managed by the Bureau. Small sections owned by the State of California and private lands are to the west and south. We summarized the information in the remainder of the Environmental Baseline section from the draft environmental impact statement (Bureau 2010).

The surface of the site is characterized by desert scrub vegetation dominated by creosote bush (*Larrea tridentata*, 319 acres) and white-bursage (*Ambrosia dumosa*, 176 acres), desert washes (18 acres), and disturbed/sparsely vegetated soils (5 acres). The entire proposed action area is an alluvial fan consisting primarily of sandy loam soils on the flat terraces, loamy sandy soils, and loamy sand within the drainages and washes. The soils and alluvium are highly erosional.

A few residential homes exist along or just outside the 516-acre project footprint, but still inside the 2,200-foot buffer surrounding the project footprint (within the action area). During initial field surveys, the biologists documented evidence of frequent off-highway vehicle, firearm, and dump-site use, as well as widespread sightings of common ravens and dog activity.

Previous Consultations in the Action Area

The Service has issued two biological opinions relevant to the action area. On June 30, 2003, the Service issued a biological opinion to the Bureau regarding the effects of the designation of routes of travel in the western Mojave Desert on the desert tortoise and its critical habitat (Service 2003). As a result of the proposed action, the Bureau designated routes of travel on public lands as open, closed, or limited to vehicular use. The proposed action resulted in a reduction in the mileage of open routes on public lands; additionally, any route that was not designated as open was considered to be an unauthorized route. The Service concluded that the Bureau's designation of routes of travel was not likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat.

On January 9, 2006, the Service issued a biological opinion to the Bureau regarding the effects of a proposed amendment to the California Desert Conservation Area Plan for the western Mojave Desert on the desert tortoise and its critical habitat (Service 2006b). In this case, the Bureau's proposed action was a substantial revision of the California Desert Conservation Area Plan, with the fundamental goal of adopting numerous management prescriptions that were intended to promote the recovery of the desert tortoise. These prescriptions addressed grazing, land use classification, recreation, and numerous other elements of the Bureau's management of the western Mojave Desert, including a minor revision of the route network considered in the consultation discussed in the previous paragraph. The Service concluded that the Bureau's amendment of the California Desert Conservation Area Plan for the western Mojave Desert was not likely to jeopardize the continued existence of the desert tortoise or adversely modify its critical habitat because the vast majority of changes addressed in the amendment reduced the intensity of use and were protective of the desert tortoise.

Status of the Desert Tortoise in the Action Area

The protocol level desert tortoise surveys, conducted between March 24 and April 10, 2009, consisted of 100 percent coverage of the area via belt transects within the proposed project site, in addition to a 500-foot buffer. In areas where higher densities of sign or desert tortoises were encountered, buffer transects were extended up to 1,200 feet from the project boundary. The zone-of-influence surveys included single line transects extending 600, 1,200, and 2,400 feet from the project boundary in areas adjacent to and surrounding existing suitable desert tortoise habitat. Survey results are summarized in the table below:

	Desert Tortoise	*Skeletal/Shell Remains*	*Burrows*	*Scat*
Within Project Footprint	1	1	33	0
Outside Project Boundary (within survey buffer/ZOI)	6	4	74	38

Table summarized from 2009 desert tortoise survey results for proposed Chevron solar project site (Bureau 2009).

The majority of the live desert tortoises, sign, suitable habitat, and forage vegetation were found to the south, southeast, and southwest outside of the project boundary. The biological assessment notes that carcasses of desert tortoises were found near areas used for shooting; however, the cause of death could not be established because many of the carcasses had been broken up.

Although only one desert tortoise was detected on the site of the proposed project, we recognize that this survey represents a single point in time and the number of individuals on the site may change by the onset of construction. For example, the desert tortoise that was found on site may leave or die. Alternatively, the number of desert tortoises present on the site may increase by the time construction commences. For example, one or more desert tortoises may not have been detected during the initial survey; other desert tortoises may have moved on to the site since the time of the surveys. Finally, desert tortoises may have emerged from a nest on the site; this scenario could increase the overall number of individuals most dramatically; for example, if a clutch of seven eggs (i.e., the number of eggs in a clutch that would be considered large) hatched, this increase would be much more than we would expect from individuals moving on to the site.

To attempt to quantify this subjective description, we will use the lower 95 percent confidence interval that we determined for the density of desert tortoises in the Western Mojave Recovery Unit as the likely number of subadult and adult desert tortoises that are likely to be found on site. Based on this lower limit (6.8, Service 2009b), we project that no more than 5 subadult and adult desert tortoises are likely to be found within the 516-acre project site (i.e., 6.8 desert tortoises per square mile/640 acres = 5.47/516 acres). We used the lower limit because the survey results (i.e., one desert tortoise on 516 acres) seemed to indicate that desert tortoises were not abundant on the project site.

Juvenile desert tortoises are extremely difficult to detect because of their small size and their cryptic nature. Based on 4-year study of their population ecology, Turner et al. (1987) determined that juveniles accounted for 31.1 to 51.1 percent of the overall population. Using this range and a maximum of 5 subadult and adult desert tortoises on the proposed site, we estimate that the 516-acre project area may support from 2 to 5 juveniles.

To estimate the number of eggs that could be present on the project site, we used the average number of clutches per reproductive female in a given year, (i.e., 1.6, see Turner et al. 1984), multiplied by the average number of eggs found in a clutch (i.e., 5.8, see Service 1994). By approximating a 1:1 sex ratio, we assumed that 3 out of the 5 subadult and adult desert tortoises are reproductive females and that, together, they could produce approximately 28 eggs in a given year. Fewer eggs are likely to be onsite at any given time because the territories of the female desert tortoises likely extend, at least in part, off of the project site and individuals may establish nests in these areas.

EFFECTS OF THE ACTION

Construction of the Facilities

CES has proposed to permanently fence the perimeter of the project site (i.e., the 516-acre area that would support the solar facility) and temporarily fence Santa Fe Fire Road with desert tortoise exclusion fencing; once the fencing is in place, CES will remove all desert tortoises from the 516-acre site prior to ground disturbance. For this reason, construction activities would generally have no direct effect on desert tortoises.

We anticipate that construction, including construction access, is unlikely to kill subadult and adult desert tortoises because most of them would be removed prior to the onset of ground disturbance. Surveyors may miss desert tortoises during clearance surveys and construction monitoring. We cannot predict how many tortoises may be missed; however, because CES will use qualified biologists, authorized by the Service, to protect desert tortoises during these activities and because only one animal was found onsite, we anticipate that five or fewer subadult and adult desert tortoises are likely to be injured or killed during construction. We based the estimate of six subadult and adult desert tortoises on the calculations contained in the Environmental Baseline - Status of the Desert Tortoise in the Action Area section of this biological opinion.)

Juvenile desert tortoises and eggs are difficult to detect during surveys and construction monitoring because of their small size and cryptic nature; therefore, the potential exists that surveyors may miss them and they may remain in the work areas during construction. Based on the calculations contained in the Environmental Baseline - Status of the Desert Tortoise in the Action Area section of this biological opinion, we estimate that up to 5 juvenile desert tortoises and 28 eggs may be present on site at the time of construction. The proposed flagging and checking of all burrows on the 516-acre site may enable the detection of at least some of the eggs; however, even experienced desert tortoise workers have found very few nests when conducting clearance surveys (Bransfield 2010). Because juveniles can take shelter in burrows of all sizes and they are difficult to see when they are above ground, surveyors are less likely to detect them than they are adult and subadult desert tortoises. Consequently, we expect that most of the juvenile desert tortoises and eggs within the 516-acre project site would be injured or killed as a result of construction. Substantially fewer than 28 eggs may be present onsite because construction may occur at a time of the year when eggs are not present, the number estimated likely represents the upper range of eggs that may be present, and at least some clutches were likely to have been laid in portions of the females' territories that were outside the project area.

Verizon would install fiber-optic line on the existing distribution line between the new solar facility and State Highway 247. Desert tortoises may be struck by vehicles or trampled by workers during the installation, resulting in injury or death of these individuals. The monitoring of the installation, as proposed by the Bureau is likely to reduce the number of animals that are injured or killed. Consequently, for that reason and because the work would be conducted in an existing disturbed area (i.e., from the road that parallels the distribution line) and would be completed in a relatively short period of time, we anticipate that few desert tortoises would be injured or killed as a result of this activity. We cannot predict precisely how many may be injured or killed because of the numerous variables involved (e.g., the duration of installation, the time of year work occurs, how many desert tortoises are in the area, whether the desert tortoises enter work areas, whether the monitors detect them before they are injured or killed).

Capture and Relocation of Desert Tortoises

CES will capture and relocate all desert tortoises that are within the 516-acre project site; any eggs that are detected would also be moved off-site. Desert tortoises that are in work areas outside of the fenced facility will also be moved from harm's way.

We cannot determine precisely how many desert tortoises within the project footprint will be relocated. According to the biological assessment and the results of focused surveys (Bureau 2009), surveyors found one desert tortoise within the southeast corner of the proposed site where ground-disturbing activities during Phase II would occur. However, additional desert tortoises may move into work areas prior to project implementation; additionally, eggs laid onsite may have hatched since the time of the surveys. Based on survey results, we expect few desert tortoises or eggs will require relocating. As described in the Environmental Baseline - Status of the Desert Tortoise in the Action Area section of this biological opinion, we estimate that up to 5 subadult and adult and 5 juvenile desert tortoises and 28 eggs may be present on site at the time of construction; therefore, we anticipate that these individuals may be captured and relocated, if they are found during surveys.

Some potential exists that capturing desert tortoises may cause elevated levels of stress that may render these animals more susceptible to disease. Because CES will use experienced biologists approved by the Service and the Bureau and approved handling techniques, collected desert tortoises are unlikely to suffer substantially elevated stress levels.

Relocated desert tortoises occasionally try to return to their original capture site and thus spend relatively greater amounts of time above ground. This behavior may expose them to elevated risks of predation and exposure to temperature extremes that they would otherwise avoid. In such cases, relocation could result in injury to or mortality of desert tortoises. We anticipate this effect to be minor since few animals are likely to be relocated and, if so, they would not be moved out of or far from their home range.

We do not have information on how frequently eggs that are moved in the wild hatch. In captivity, experienced workers can move nests with some success; therefore, the potential exists that eggs may be moved successfully. Under natural conditions, at least some nests are likely destroyed by predators (Bjurlin and Bissonette 2004). Given this fact and because nests are difficult to detect, we expect that few nests, if any, will be found during pre-construction surveys. Consequently, we expect that any eggs that may occur onsite during construction are likely to be destroyed; as noted previously, we expect that up to 28 eggs may be present. The loss of this reproductive effort is unlikely to substantially diminish the desert tortoise's ability to persist in the area for several reasons. First, although we calculated that up to 28 eggs may occur on site, the most likely scenario is that fewer eggs would be present on the project site because at least some eggs would be laid in portions of home ranges that would not be affected by the proposed project. Second, at least a portion of desert tortoise nests are destroyed by predators; even without the proposed action, some eggs would not hatch. Last, the 516 acres on which the eggs would be laid represents a very small portion of the area where desert tortoises could nest in this region.

The relocation of any desert tortoise from the project area into surrounding habitat has the potential to disrupt the behavior and social structure of resident animals. Such disruption may impair their breeding, feeding, and sheltering by elevating the frequency and intensity of aggressive interactions between individuals. We anticipate that, overall, such an effect is likely to be minor, given that fewer than five subadult and adult and five juvenile desert tortoises are likely to be relocated and, thus, few resident animals are likely to be affected. In addition, because of the relatively small size of the proposed project, the home ranges of the desert tortoises onsite may currently overlap with those of animals offsite; therefore, interactions between those individuals would be affected minimally. Additionally, Walde et al. (2008) found that the differences in reproduction among translocated, resident, and control desert tortoises were "not likely to be statistically significant" in a study of 132 female desert tortoises at Fort Irwin; because that translocation involved movement of desert tortoises much greater distances than they would be moved for this project, we anticipate that any differences in reproduction that may be caused by moving desert tortoises would be less pronounced in this situation.

We expect that some desert tortoises may be found in work areas outside of the fenced project site (e.g., on the access road). These animals will be handled for a short period of time and moved a relatively short distance into surrounding habitat. In most cases, they will be moved within their home ranges and, therefore, would be familiar with their surroundings; in some cases, a desert tortoise making a long-distance movement may be encountered and moved. In both of these situations, we do not expect the brief time of handling by an experienced person and movement of the desert tortoise a short distance to be likely to compromise the animal's safety or health in any manner. Some potential exists that desert tortoises residing near the project site may enter work areas and need to be moved on more than one occasion. Because of such variables, we cannot predict how many animals may be moved in this manner; generally, we expect that such handling will not occur frequently, given the low density of desert tortoises in the vicinity.

Operation and Maintenance Activities

Operation and maintenance activities within permanently fenced areas are unlikely to injure or kill desert tortoises. However, over the 30-year life of this project, desert tortoises could be injured or killed by increased traffic on existing access roads, by workers walking the perimeter of the fence during inspections, and during repair of the perimeter fence; additionally, if the perimeter fence is damaged, desert tortoises could enter the facility and be killed or injured during routine activities. Because CES has proposed several protective measures such as limiting speed limits to 20 miles-per-hour, restricting equipment to within the right-of-way, and inspecting the entire fence after every significant storm event from within the right-of-way, we anticipate few desert tortoises will be affected.

Loss of Habitat

Construction of the proposed solar facility would cause the long-term loss of a maximum of 516 acres of desert tortoise habitat. Given that the area covered by the solar panels would be covered in pea gravel and regularly sprayed with herbicide, restoration of the area to pre-project condition may not be possible.

The proposed action will temporarily, but for a period of at least 30 years, remove approximately 516 acres of desert tortoise habitat. The habitat in the fenced project area will be restored when the project is decommissioned, but is unlikely to function as suitable desert tortoise habitat for many years following facility closure. We cannot predict the amount of time required to return areas of long-term disturbance to suitable desert tortoise habitat because of numerous variables associated with restoration success.

Two additional future conditions are possible. First, the site may continue to be used for power generation beyond the currently proposed 30 years. Second, because this area of the desert is not being actively managed for the conservation of the desert tortoise and the nearby private lands may undergo development during the life of the project, the lands surrounding the project site may no longer support desert tortoises; in such a case, restoration of the project site to suitable habitat for desert tortoises would serve no useful function with regard to the conservation of the species. In either case, restoration of the site is highly unlikely to benefit desert tortoises in any manner.

The installation of the fiber-optic line on the existing distribution line will not result in the disturbance of a substantial amount of habitat because most work would be conducted from the existing road.

Miscellaneous Effects

Desert tortoises may also be killed or injured as a result of various indirect effects caused by construction, operation, and maintenance of the proposed project within their habitat. CES has proposed numerous measures to reduce or eliminate these threats. For example, by providing educational programs to workers that provide information on desert tortoises and the protective measures that must be implemented, we expect that workers are far less likely to kill, injure, or collect desert tortoises either carelessly or intentionally.

Common ravens are attracted to human activity in the desert. Securing trash will likely eliminate it as a source of food for common ravens and other predators, thereby reducing the attractiveness of the area to these predators. We expect that common ravens are still likely to frequent the site because it would offer perching, roosting, and possibly nesting sites, both within the solar field and on the connecting power line. Consequently, the proposed facility has the potential to attract common ravens to some degree and lead to further predation on desert tortoises in the vicinity; the proposed measures to monitor use of the site by common ravens and to attempt to remove any subsidies is likely to reduce the attractiveness of the facility to these birds to some degree. CES's funding of the regional management plan for common ravens will contribute to a large-scale management action that the Service and other agencies are undertaking to control and manage common ravens on a regional basis. We expect that implementation of this plan will promote the recovery of the desert tortoise by reducing the number of common ravens that prey on desert tortoises and by implementing actions that are likely to reduce subsidies for common ravens on a regional basis.

Non-native plant species could potentially invade areas disturbed by project activities and spread from the project area into surrounding habitat. If non-native species increase in abundance, the risk of fire and additional loss of habitat may increase. CES's proposal to routinely control non-native plants within the solar field through the use of herbicides should reduce the likelihood that it would be a source of seeds for offsite invasion. Disturbed areas outside of the solar field may be a seed source for weeds; however, these areas are relatively small and CES is proposing to monitor and control invasive species in these areas to further reduce the likelihood of adverse effects.

The use of herbicide within the 516-acre project area is not likely to adversely affect desert tortoises because the Bureau will ensure it is used according to label restrictions and only within the fenced area, where desert tortoises are not present. Strict use according to the label restrictions should ensure that pesticides do not enter desert tortoise habitat outside the fenced area.

The Bureau and CDFG will require CES to compensate for the adverse effects of the proposed action on the desert tortoise. Consequently, at least 516 acres of desert tortoise habitat will be acquired to partially offset the adverse effects of the project within the Ord-Rodman, Superior-Cronese, or Fremont-Kramer desert wildlife management area. This acquisition will benefit desert tortoises because the acquired lands will be managed for the long-term conservation of the species and would no longer be available for private development.

The Bureau will also require CES to fund the implementation of measures to promote the long-term conservation of the desert tortoise. These measures include, but are not limited to the fencing of Highway 247 to prevent desert tortoises from entering the road, the restoration of disturbed areas, and installing barriers to prevent illegal vehicle use of the Ord-Rodman Desert Wildlife Management Area. These measures will benefit the desert tortoise by removing threats to individuals or increasing the value of habitat with areas determined to be important for her recovery of the species. The potential also exists to develop a comprehensive, research-based program of headstarting desert tortoises.

Because we do not have specific information regarding these future enhancement projects or acquisitions, we cannot fully analyze the benefits provided by these actions; if the Bureau, as it prepares to implement these measures on the ground, determines that they are likely to adversely affect desert tortoises or their critical habitat, it would initiate formal consultation with the Service. However, the Service (1994, 2008) has recommended that such actions be implemented in the original and draft revised recovery plan for the desert tortoise. Consequently, we expect these actions will result in some improvement in the conservation status of the species.

Summary

CES will implement numerous measures to avoid, minimize, reduce, and offset the adverse effects on the desert tortoise of the proposed action. Additionally, the proposed project footprint supports few desert tortoises. Consequently, we expect that 5 or fewer subadult and adult and 5 or fewer juvenile desert tortoises will be captured, injured, or killed during construction of the solar facility; we anticipate that up to 28 eggs may be moved or destroyed during construction. Few desert tortoises of any size will be killed or injured during operation and maintenance of the facility. We expect that most desert tortoises encountered during work activities would be moved relatively short distances out of harm's way. Because the Bureau and CES will implement a variety of measures to reduce stress to these animals and because the animals will be released within or close to their home range, we do not anticipate that injury or mortality will result from the handling and relocation of these animals.

Regardless of the success of restoration efforts, loss of the habitat on the project site would not substantially reduce the ability of the desert tortoise to survive and recover in the wild. The Service, as noted in the recovery plan (Service 1994) and the final rule for designation of critical habitat for the desert tortoise (59 *Federal Register* 5820), does not consider this area as essential for the long-term conservation of the species. The compensation being required of CES by the Bureau and CDFG (i.e., the acquisition of 516 acres of habitat within a desert wildlife management area in the Western Mojave Recovery Unit and implementation of management actions within the Ord-Rodman Desert Wildlife Management Area to reduce threats to the desert tortoise and improve habitat quality) will promote the recovery of the desert tortoise.

To conclude, areas disturbed by the proposed solar facility would no longer support reproduction of desert tortoises. Any desert tortoises that are moved from the site of the proposed project would likely continue to reproduce in adjacent habitat. We anticipate that as many as 28 eggs may be destroyed by the proposed action; however, the loss of this number of eggs is not likely to diminish the ability of the species to persist in the area, in part because the affected area represents a small portion of the area available to desert tortoises for nesting in the region. Consequently, we anticipate that the proposed action will not appreciably diminish the reproductive capacity of the species, particularly in light of the few desert tortoises that would be affected.

Implementation of the proposed action would not appreciably reduce the number of desert tortoises in the Western Mojave Recovery Unit. Only one desert tortoise was detected in the project area during surveys; however, for the reasons we provided in the Environmental Baseline - Status of the Desert Tortoise in the Action Area section of this biological opinion, we have estimated that as many as 5 subadult and adult and 5 juvenile desert tortoises may be present at the time of construction; we also estimated that as many as 28 eggs may be present on the site. However, even if the upper limit of the estimated number of desert tortoises was present, the number of desert tortoises within the project's footprint would still comprise a minor component of the population of desert tortoises in the Western Mojave Recovery Unit (i.e., 12 desert tortoises of all sizes of approximately 125,855 subadult and adult and as few as 56,544 juvenile desert tortoises within the Western Mojave Recovery Unit). Because so few desert tortoises are likely to be affected by the proposed project, the change in the number of individuals within the recovery unit that may result from the proposed action would not be measurable.

The distribution of the desert tortoise would be minimally reduced as a result of the long-term disturbance associated with the proposed action. Previously, we had estimated that the Western Mojave Recovery Unit supports approximately 6,268 square miles of desert tortoise habitat (Service 2007); based on the Nussear et al. (2009) model and our calculations (Waln 2010), the Western Mojave Recovery Unit may support as much as 10,316 square miles of desert tortoise habitat. Consequently, the proposed action would result in the loss of form approximately 0.0078 to 0.01 percent of the habitat in the Western Mojave Recovery Unit. This percentage does not constitute a numerically substantial portion of the recovery unit. We do not have the ability to place a numerical value on edge effects and overall fragmentation that the proposed action may cause or that occurs in the recovery unit as a whole; however, given the location of the proposed action in an area that has already experienced some degree of rural development near the edge of the desert tortoise's range, we do not anticipate that the amount of habitat to be lost as a result of the proposed action would reduce the distribution of the desert tortoise to a measurable degree.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. We performed a web search (http://www.co.san-bernardino.ca.us/landuseservices/) for permit applications that the County of San Bernardino accepted from 2002 through 2010 for projects on private lands within the action area to assess cumulative effects. According to this source, no non-federal projects are currently proposed within the action area.

CONCLUSION

After reviewing the current status, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the Bureau's proposed issuance of a right-of-way grant to CES for the Lucerne Solar Electric Generating Plant is not likely to jeopardize the continued existence of the desert tortoise. We reached this conclusion because the proposed action will affect a small amount of suitable habitat and very few desert tortoises. Additionally, the proposed action is located in an area that we do not consider important for the long-term conservation of this species; this area is near the edge of the species' range, supports few desert tortoises (mostly likely as a result of the combination of past and ongoing human activities and the location of the site at the edge of the range), and is adjacent to large blocks of private lands where the potential for the long-term conservation of desert tortoises in minimal. Consequently, the development and operation of the proposed solar plant will not compromise the recovery of the desert tortoise. CES will implement or fund several measures to offset the potential adverse effects of the action on the desert tortoise; therefore, the proposed action will, to some degree, promote the conservation of the species through the acquisition of lands important to its recovery and by implementing on-the-ground actions to reduce mortality and improve habitat quality.

As we noted previously in this biological opinion, the analysis we conduct under section 7(a)(2) of the Endangered Species Act must be conducted in relation to the status of the entire listed taxon. We based the analysis in this biological opinion within the context of the Western Mojave Recovery Unit because of the wide range of the desert tortoise. Because we have determined that the effects of this action would not compromise the integrity of the Western Mojave Recovery Unit or impede the survival or recovery of the desert tortoise in a measurable manner in this portion of its range, we have not extended the analysis of the effects of this proposed action to the remainder of the range of the Mojave population of the desert tortoise.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described in this incidental take statement are non-discretionary; the Bureau must undertake these measures or make them binding conditions of any authorization provided to CES, Southern California Edison, or Verizon. The Bureau has a continuing duty to regulate the activities covered by this incidental take statement. If the Bureau fails to assume and implement the terms and conditions of the incidental take statement or make them binding conditions of any authorization provided to CES, Southern California Edison, or Verizon, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Bureau must report the progress of its action and its impact on the species to the Service as specified in the incidental take statement (50 *Code of Federal Regulations* 402.14(i)(3)). We also note that, because the Service considered the effects of the protective measures proposed by the Bureau, Southern California Edison, and CES in its analysis of the proposed action, these measures are also non-discretionary.

We anticipate that all desert tortoises within the 516-acre fenced area will be taken during construction of the proposed 516-acre solar facility. We anticipate that most of the individuals within this area will be captured and relocated to nearby suitable habitat. A small number of desert tortoises may be killed or injured during implementation of the proposed action. Based on the results of surveys conducted on the site and analysis in this biological opinion, no more than five subadult and adult and five juvenile desert tortoises are likely to be taken (i.e., captured, injured, or killed).

We anticipate that up to 28 eggs will be taken during construction of the proposed 516-acre solar facility. Some eggs may be moved to locations outside of the 516-acre facility; most would likely be destroyed because they will not be detected prior to construction.

Because we can reasonably estimate the numbers of desert tortoises and eggs that are likely to be taken within the 516-acre project area, we have provided these numbers in this incidental take statement. As required by the implementing regulations for section 7(a)(2) of the Endangered Species Act (50 Code of Federal Regulations 402.16), the Bureau must re-initiate consultation if the amount or extent of incidental take is exceeded.

We anticipate that a few desert tortoises outside of the 516-acre fenced area will be taken during construction and operation of the proposed solar facility. Because desert tortoises can move through this area (i.e., the area will not be fenced to preclude their entry), we cannot predict how many individuals will be taken. Most of these desert tortoises will be captured and relocated to nearby suitable habitat; some are likely to be injured or killed on the access road.

A limited number of desert tortoises may gain entry to the fenced area over the 30-year life of the project. Because of the numerous variables involved, we cannot predict how many desert tortoises may gain entry to the facility. Most of these desert tortoises will be captured and relocated to nearby suitable habitat; some are likely to be injured or killed on the access road.

We cannot reasonably estimate the numbers of desert tortoises that may enter work areas outside of the 516-acre fenced area during construction, be found on the access road during operation of the facility, or breach the exclusion fence (i.e., we do not know the number of animals in surrounding areas or how often they may be encountered by workers). Therefore, we have used the reasonable and prudent measures and terms and conditions of this incidental take statement to establish a threshold that, if met, would require the Bureau to re-initiate consultation.

The exemption provided by this incidental take statement to the prohibitions against take contained in section 9 of the Act extends only to the action area as described in the Environmental Baseline section of this biological opinion.

REASONABLE AND PRUDENT MEASURE

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize take of desert tortoises during the implementation of the CES Lucerne Solar Electric Generating Plant:

> The Bureau must ensure that the level of incidental take anticipated in this biological opinion is commensurate with the analysis contained herein.

Our evaluation of the proposed action includes consideration of the protective measures proposed by CES and the Bureau in the biological assessment and re-iterated in the Description of the Proposed Action section of this biological opinion. Consequently, any changes in these protective measures may constitute a modification of the proposed action that causes an effect to the desert tortoise that was not considered in the biological opinion and require re-initiation of consultation, pursuant to the implementing regulations of the section 7(a)(2) of the Act (50 Code of Federal Regulations 402.16).

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Bureau must comply with the following terms and conditions, which implement the reasonable and prudent measure, and the following reporting and monitoring requirements. These terms and conditions are non-discretionary.

The following terms and conditions implement the reasonable and prudent measure:

a. To ensure that the measures proposed by the Bureau and CES are effective and are being properly implemented, the Bureau must contact the Service immediately if it becomes aware that a desert tortoise has been killed or injured by project activities. At that time, the Service and the Bureau must review the circumstances surrounding the incident to determine whether the protective measures proposed by the Bureau (and described previously in this biological opinion) are effective and being properly implemented or whether additional protective measures are required. Project activities may continue pending the outcome of the review, provided that the Bureau's proposed protective measures and any appropriate terms and conditions of this biological opinion have been and continue to be fully implemented.

b. The Bureau must re-initiate consultation, pursuant to the implementing regulations for section 7(a)(2) of the Endangered Species Act at 50 Code of Federal Regulations 402.16, on the proposed action if:

   3 desert tortoises are taken (i.e., captured, injured, or killed) over the life of the proposed action or if 2 desert tortoises are taken (i.e., captured, injured, or killed) within any 12-month period within the 516-acre facility during its operation (i.e., if they breach the desert tortoise exclusion fence)

   or

   3 desert tortoises are killed or injured over the life of the proposed action or if 2 desert tortoises are killed or injured within any 12-month period outside of the 516-acre facility. Because we do not expect that capturing and removing desert tortoises from work areas outside of the 516-acre facility are likely to result in injury or mortality of desert tortoises, we are not establishing a criterion for re-initiation of formal consultation for this activity.

REPORTING REQUIREMENTS

The Bureau's proposal to provide information on the progress of construction (measure 24) partially satisfies this requirement. In addition, the Bureau must provide an annual report each year the facility is in operation. As part of these reports, the Bureau must describe the monitoring efforts that occurred during the reporting period. In addition, the report must include information on any instances when desert tortoises were killed, injured, or handled; the circumstances of such incidents; and any actions undertaken to prevent similar instances from re-occurring. We also request that the Bureau provide us with the names of any monitors who assisted the authorized biologist and an evaluation of the experience they gained on the project; the qualifications form on our website (http://www.fws.gov/ventura/sppinfo/protocols/deserttortoise_monitor-qualifications-statement.pdf), filled out for this project, along with any appropriate narrative would provide an appropriate level of information. This information would provide us with additional reference material in the event these individuals are submitted as potential authorized biologists for future projects.

DISPOSITION OF DEAD OR INJURED DESERT TORTOISES

The Bureau's proposal to provide information on the injury or mortality of desert tortoises (measure 23) partially satisfies this requirement. The Ventura Fish and Wildlife Office may be contacted by telephone (805 644-1766), facsimile (805 644-3958), or electronic mail.

Care must be taken in handling dead specimens to preserve biological material in the best possible state for later analysis, if such analysis is needed. The Service will make this determination when the Bureau provides notice that a desert tortoise has been killed by project activities.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We have no conservation recommendations at this time.

REINITIATION NOTICE

This concludes formal consultation on the Bureau's proposal to issue a right-of-way grant to CES for the Lucerne Valley Chevron Solar Project in San Bernardino County. As provided in 50 CFR 402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

If you have any questions regarding this biological opinion, please contact Danielle Dillard of my staff at (805) 644-1766, extension 315.

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Appendix L
Eagle Survey

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Chambers Group®
Solving Environmental Challenges

July 7, 2010

Ram Ambatipudi
Sr. Business Development Manager
Chevron Energy Solutions
150 E. Colorado Blvd, Suite 360
Pasadena, Ca 91105

Subject: Results of Eagle Surveys by Helicopter for the Chevron Energy Solutions Solar Project Site Located in a Community of Lucerne Valley, San Bernardino County, California.

Dear Mr. Ambatipudi

Chambers Group, Inc. (Chambers Group) is pleased to submit this memo report to Chevron Energy Solutions for biological services for an approximately 516-acre parcel located in the Community of Lucerne Valley, San Bernardino County, California. This memo report summarizes the formal Eagle Survey conducted on June 7 and 9, 2010.

PROJECT DESCRIPTION AND SITE LOCATION

The Chevron Solar Project site, comprising approximately 516 acres, is located just south of CA-247 off the I-15 Freeway at Bear Valley Road, approximately 8 miles east of the junction of Barstow Road and Old Woman Springs Road, east of the City of Lucerne Valley in San Bernardino County, California. The site is located south of Foothill Road and is bordered by Donaldson Road on the west and a drainage that runs approximately 1,300 feet east of Santa Fe Fire Road on the east. The site is within the U.S. Geological Survey (USGS) Cougar Buttes, California 7.5-minute topographic quadrangle in Sections 19, 20, 29, and 30 of Township 4 North, Range 2 East and in Section 24 of Township 4 North, Range 1 East (Attachment). The elevation range at the site is between approximately 3,000 and 3,120 feet above mean sea level. Vegetation communities identified onsite include creosote-bush and white-bursage series vegetation.

METHODS

Prior to the field survey, Chambers Group biologists reviewed historic USFWS, BLM, and CNDDB data regarding existing occurrences and previously occupied golden and bald eagle nest sites within the Lucerne Valley area. Golden Eagles (*Aquila chrysaetos canadensis*) are protected by the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act (Eagle Act). Chambers Group conducted surveys in accordance with the *Interim Golden Eagle Monitoring and Protocols, and Other Recommendations*, USFWS, February 2010. This document was designed to help in determining and

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evaluating potential Golden Eagle use of habitat including nest sites, roosts, and territories, and foraging locations.

To appropriately cover the 10-mile survey area around the project site for eagles, Chambers Group conducted the surveys via helicopter to survey appropriate habitat from the air. Surveys focused on habitat such as cliff faces and tower lines that could potentially host golden eagle nests, or large trees near riparian areas that could potentially support bald eagles. To appropriately cover the entire survey area, the crew flew to each outcrop of rock in the desert areas (upper two-thirds of the survey area). Each outcrop of rock was surveyed by flying directly adjacent to the rock at several different elevations for 100 percent visual coverage. The crew also flew along the two transmission lines: Single Steel Tower Transmission Line which is located near the upper third of the project survey area in a northeast to southwest direction, and the Steel Tower Transmission Line along the northwestern boundary. For the southern areas along the San Bernardino Mountain Ranges and the National Forest Areas, the crew flew transects along the mountains and flew within each canyon at different elevations for 100 percent coverage. The crew began in the southeast corner and flew transects along each canyon as they worked to the southwest. This was repeated from the southwest as they worked east on the second survey day. Over the more relatively flat areas near the Baldwin Lake and Big Bear Lake areas, the crew flew in quarter mile transects over the tall trees that could potentially support bald eagle nest sites. Photographs and GPS coordinates of nest site locations were recorded for eagles, raptor including red-tailed hawk and prairie falcon, and raven species.

RESULTS

Pete Bloom, a raptor specialist in California, led the helicopter survey effort on June 7 and June 9, 2010. Mr. Bloom was assisted by Chambers Group biologists Paul Morrissey and Kris Alberts during the survey effort to carefully document the flight and record GPS coordinates and other mapping components during the survey effort. Surveys were conducted on June 7, 2010 from 1000 hours to 1856 hours. Temperatures ranged from 62 degrees to 98 degrees Fahrenheit due to the elevation differences which ranged from approximately 2,840 feet near the dry Lucerne Lake area to 8,235 feet above mean sea level near Gold Mountain in the Big Bear Lake area. The upper two thirds and the southeastern area of the survey area were covered on June 7 under good visibility and low winds. A R44 helicopter was used for this first effort. The second survey was conducted on June 9, 2010 from 0830 hours to 1430 hours. Temperatures ranged from 51 degrees to 87 degrees Fahrenheit with good visibility and low winds. The crew covered the lower third of the survey area and revisited areas that were difficult to fly into on June 7 due to factors affecting flight including elevated winds late in the day, heat, elevation, and safety concerns. A MD500 helicopter was used for the June 9 survey effort which is a smaller helicopter allowed for more maneuvering in tight and steep locations such as the canyons found in the southern areas.

Fourteen golden eagle nest locations were identified during the June 7 and June 9 survey efforts. Of the fourteen nest sites, eleven inactive and three active golden eagle nests were identified. Thirty-five raven nests, one inactive red-tailed hawk nest, and one active prairie falcon nest were identified during the surveys. The eagle and raptor nest locations are presented in Table 1 below.

Table 1
Eagle and Raptor Nest Locations Identified During the June 7 and 9 2010 Surveys

Date	Species	Status	GPS number	General Area
June 7 2010	eagle	inactive	279	Fry Mountains
June 7 2010	eagle	inactive	295	Single Steel Tower Transmission Line (Fry Mountains area)
June 7 2010	eagle	inactive	301	Single Steel Tower Transmission Line (Fry Mountains area)
June 7 2010	eagle	inactive	307	Cougar Buttes
June 7 2010	eagle (1), prairie falcon (1)	inactive (eagle), active (falcon) fledged	310	Cougar Buttes
June 7 2010	eagle (2)*	one inactive, one active with fledgling	312	Blackhawk Mountain Area - duplicate with nest sites indicated as point 007
June 7 2010	eagle (2), raven (1)	eagle (1 active fledged, 1 inactive), raven (inactive)	315	Granite Peaks Area near Rattlesnake Canyon
June 7 2010	eagle*	inactive	317	Silver Peak area - duplicate of point 006
June 7 2010	eagle*	inactive	318	Marble Canyon Area - duplicate of nest sites indicated as point 004
June 9 2010	eagle/ red-tail hawk	Active - fledged	001	Silver Creek Area southwest of Pitzer Buttes
June 9 2010	eagle	inactive	003	Arctic Canyon Area
June 9 2010	eagle (1)*, raven (2)	all inactive	004	Marble Canyon Area - duplicate of nest sites indicated as point 318
June 9 2010	eagle	inactive	005	Rattlesnake Canyon Area to southeast of survey area

June 9 2010	eagle*	inactive	006	Blackhawk Mountain Area near Silver Peak - duplicate of nest site indicated as point 317
June 9 2010	eagle (2)*	1 inactive, 1 active with fledgling	007	Blackhawk Mountain Area north facing slope - duplicate with nest sites indicated as point 312
* = Duplicate coordinate due to surveys repeated in the same area.				

Pitzer Buttes Area

One active nest location was presumed to be of an eagle (GPS number 001, June 9), approximately 13.5 miles southwest of the project site, outside the 10-mile survey area. This nest was located in the Silver Creek area approximately 4.9 miles southwest of Pitzer Buttes. An additional survey on the ground may be required to investigate whether the nest is an eagle or red-tailed hawk nest. Results of the additional field survey will be submitted to BLM. Three inactive and one active raven nests were also identified in the Pitzer Buttes area.

Blackhawk Mountain Area

One active golden eagle nest was located on Blackhawk Mountain (GPS point 007, June 9), approximately 5.5 miles south of the project site. This is the same location as the two eagle nest sites recorded for GPS point 312, one active and one inactive nest located in the same area. The GPS point 312 was recorded further away from the actual nest location due to safety concerns at the time of the survey on June 7. Conditions improved on June 9, and an eagle fledgling was observed at GPS point 007 during the survey. The eagle was observed to have no white feathers, and is presumed to leave the nest within the next few days. The other nest in the immediate area did not appear to be used recently, and was therefore considered inactive. Approximately 2,575 feet to the southeast at Silver Peak, another inactive eagle nest was identified and recorded as GPS number 317. This area was revisited on June 9 for further investigation and was recorded as GPS number 006, a duplicate record of the same inactive nest site. An inactive raven nest was also identified in this area.

Marble Canyon and Arctic Canyon Areas

An inactive golden eagle nest recorded as GPS number 318 was identified approximately 3.7 miles to the west of the active eagle nest 007, just west of the Marble Mining Pit in Marble Canyon to the west side of SR-18 (Cushenbury Canyon). This area was further investigated on June 9 when air conditions were more favorable. The nest was recorded as GPS number 004 on June 9, a duplicate record of the same inactive nest. A second inactive eagle nest recorded as GPS number 003, and was identified approximately 1.2 miles to the west of the 004 location in the Arctic Canyon area. This area appeared to have active mining and road maintenance in the area. Two inactive raven nests were identified in this area.

Rattlesnake Canyon Area

An active eagle nest was recorded as GPS number 315, located just east of Granite Peaks along Rattlesnake Canyon in the southeastern portion of the survey area approximately 10.6 miles southeast of the project site. At the time of the survey, the nest appeared to have recently fledged. An inactive golden eagle nest was located in the same general area. One inactive raven nest was also identified within this area. A second inactive golden eagle nest recorded as GPS number 005 was located approximately 4 miles to the south, upstream in Rattlesnake Canyon. This site was outside the 10-mile survey area.

Cougar Buttes Area

Two inactive golden eagle nests were identified and recorded as GPS 307 and 310 in the Cougar Buttes area approximately 4.3 miles to the north of the project site. An active prairie falcon nest was also identified and recorded as GPS 310. This area was identified as having maintained roads and private property nearby. Eagles generally avoid areas with constant human disturbances. This area does not appear to be suitable for future nest sites. Three inactive and one active raven nest were also identified in the Cougar Buttes area.

Fry Mountain Area

One inactive golden eagle nest was identified and recorded as GPS number 279, located approximately 7.1 miles northeast of the project site. This area is approximately 7.2 miles east of GPS number 310. An inactive red-tailed hawk nest was identified approximately 2.9 miles to the northeast of this location. One active and two inactive raven nests were also identified in the Fry Mountain and Soggy Lake area.

Single Steel Tower Transmission Lines

Two inactive eagle nests recorded as GPS numbers 295 and 301 were identified along the Single Steel Tower Transmission Lines approximately 9.5 and 7.6 miles to the northeast of the project site, respectively. These two nest sites were in very poor condition. Approximately 13 inactive and 7 active raven nests were identified along this transmission line across the survey area.

SUMMARY

Two active eagle nests were identified during the survey to south of the project site. One was located approximately 10.6 miles southeast of the project site near Rattlesnake Canyon, a second approximately 5.5 miles south of the project site in the Blackhawk Mountain Range. A third potentially active eagle or red-tailed hawk nest was located approximately 13.5 miles southwest of the project site. An additional eleven inactive eagle nests, 35 raven nests, one inactive red-tailed hawk nest, and one active prairie falcon nest were also identified within the survey area. No bald eagles or potential nesting sites were detected during the survey.

The Chevron Energy Solutions solar site is 516 acres. The topography of the solar site and the immediate area is not suitable for eagle nests. In addition, maintained roads such as SR 247, Foothill

Road, Donaldson Road, and Santa Fe Fire Road border the solar site. Generally, eagles are very shy creatures and avoid nesting near areas with continued human disturbance such as roads and residences. Construction of the solar site may reduce foraging areas for the eagles. However, no eagles were detected foraging in the area during the Spring and Fall Avian Point Count Surveys conducted by Chambers Group. For more details regarding the biological surveys conducted on the project site, please see the *Comprehensive Biological Resources Assessment for the Chevron Solar Project Site, Lucerne Valley California April 2010*.

If you have any questions or comments regarding this memo report or other related issues, please call me at (949) 261-5414 x 7288.

Sincerely,

Paul

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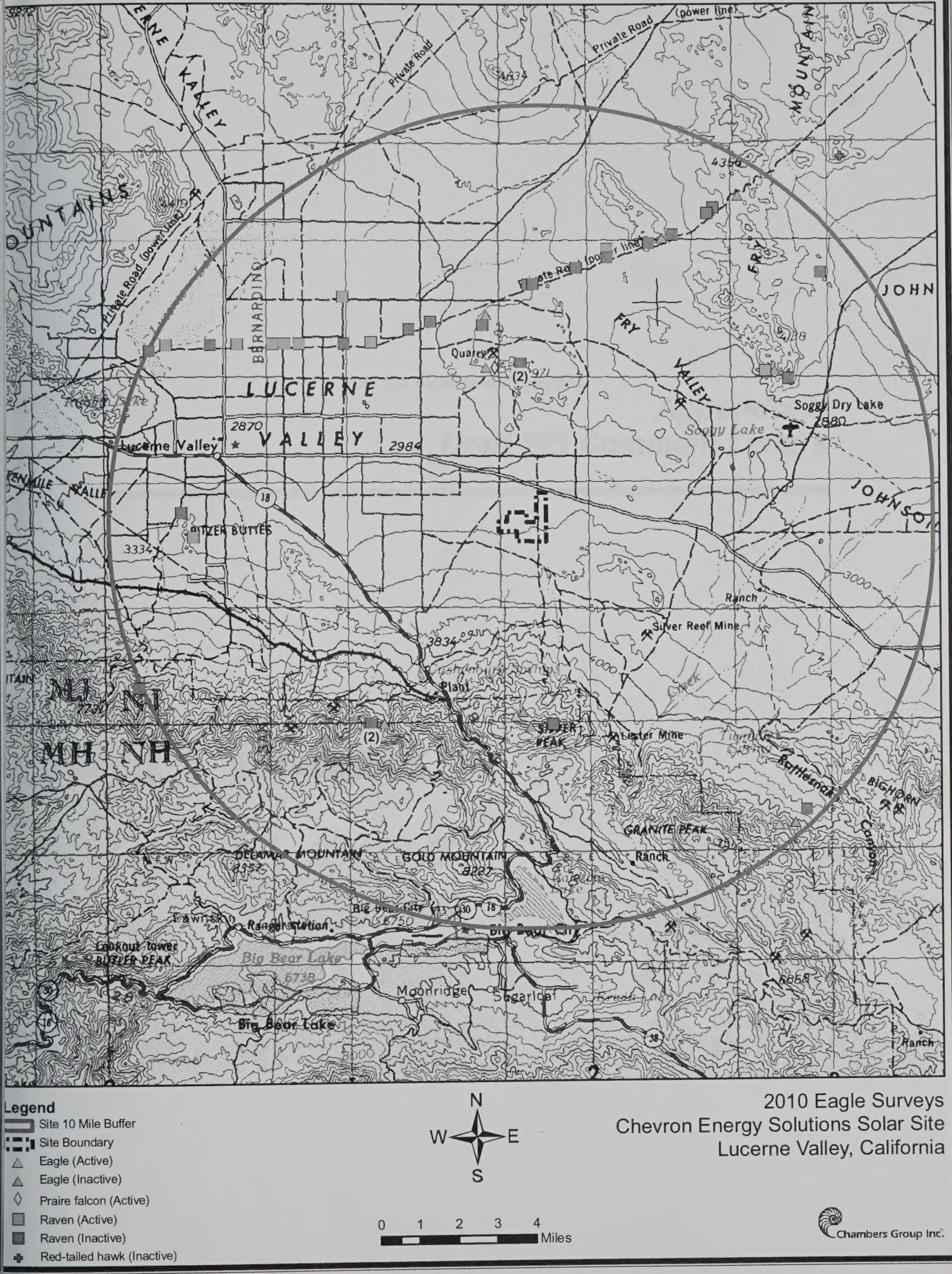
Attachment: 2010 Eagle Survey Map



2010 Eagle Surveys
Chevron Energy Solutions Solar Site
Lucerne Valley, California

Legend

▭ Site 10 Mile Buffer
⬚ Site Boundary
△ Eagle (Active)
▲ Eagle (Inactive)
◊ Praire falcon (Active)
■ Raven (Active)
■ Raven (Inactive)
✚ Red-tailed hawk (Inactive)

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Appendix M
Draft EIS Comment Letters

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Appendix M
Draft EIS Comment Letters

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Appendix M

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Draft EIS Comment Letters

1.0 Lucerne Valley Solar Project Draft EIS Comment Analysis Process

1.1 Introduction

In February 2010, the Bureau of Land Management (BLM), Barstow Field Office (BFO) released a Draft Environmental Impact Statement (DEIS) for the proposed Lucerne Valley Solar Project. On February 5, 2010, a Notice of Availability (NOA) Lucerne Valley Solar Project Draft Environmental Impact Statement/Draft CDCA Plan Amendment for public review and comment on the DEIS was published in the *Federal Register* (Vol. 75, No. 24, pp. 6057-6058). The DEIS was distributed in both hard copy and on CD-ROM and was available for downloading from the BLM's Web site at http://www.blm.gov/ca/st/en/fo/barstow.html. Additional copies of these volumes were made available for public inspection at the BLM California Desert District Office, 22835 Calle San Juan de Los Lagos, Moreno Valley, California, the Apple Valley Public Library (Newton T. Bass Branch, 14901 Dale Evans Parkway, Apple Valley, CA 92307), and at the Lucerne Valley Public Library (Janice Horst Branch, 33103 Old Woman Springs Road, Lucerne Valley, CA 92356). The BLM invited public and agency comment on the DEIS and technical support documents for a period of 90 calendar days, which was scheduled to end on May 13, 2010. However, on February 19, 2010, the BLM extended the public comment period to May 20, 2010.

A public comment meeting was held to provide information about the project and to receive comments on the Draft EIS/Draft CDCA Plan Amendment. The public comment meeting was held on Tuesday, March 9, 2010, from 6:30 PM to 8:30 PM at the Lucerne Valley Elementary School, 10788 Barstow Road, Lucerne Valley, California.

The purpose of this narrative summary is to provide the numbers and types of comments that were received during the comment period for the DEIS and to describe the process by which all comments were analyzed to determine their relevance and significance for subsequent revision of the document. In addition, this summary describes the comment tracking procedures used for preparing the Final EIS, along with the organization of Appendices N and O to assist the reader in locating specific letters/comments and BLM responses.

1.2 The Public Comment Process under NEPA

Solicitation of public comment on draft plans for major federal actions is required under the National Environmental Policy Act (NEPA). Specifically, the BLM and other federal agencies must "assess and consider [the resulting public] comments both individually and collectively" (Title 40, Code of Federal Regulations [CFR], Section 1503.4). Comments received on the Lucerne Valley Solar Project DEIS are viewed as critical to helping the BLM modify or clarify, as necessary, the existing alternatives and the preferred alternative to best suit the purpose and need for the project in light of public, project applicant, and cooperating agency input; to potentially develop and evaluate new alternatives; to supplement, improve, or modify the existing environmental analyses; and to correct factual errors in the DEIS.

1.3 Overview of Comments Received

During the 90-day comment period for the Lucerne Valley Solar Project DEIS, the BLM received twelve individual written comments, including e-mail and hard copy letters, and two written comments and four oral comments at the public meeting. Comments were received from federal, state, and local agencies, environmental advocacy groups, a law firm, the Lucerne Valley Economic Development Association, the Applicant, and members of the public.

Comments by Submittal Type

The comments were divided into the following four groups:

1. Letters;
2. E-mails;
3. Oral public meeting comments; and
4. Written public meeting comments.

1.4 Process for Tracking and Analyzing Public Comments

Public comments play an integral role in the NEPA process. Comments to the Lucerne Valley Solar Project DEIS were categorized by their form of submittal: hard copy or electronic (e-mail). The process for tracking and analyzing public comments is shown in Figure N-1 and is outlined below.

As comment documents were received, each comment was assigned a three-digit document number. Comments in documents received in the form of a letter were assigned sequential numbers starting with 001. Comments in documents received in the form of e-mail messages were assigned sequential numbers starting with 501. Oral and written comments provided during the public comment meeting were assigned sequential numbers starting with 901. All comment documents received during the public comment period have been cataloged in this manner and are being considered in preparing the Final EIS.

The BLM analyzed each letter, e-mail, written public meeting comment form, and oral public meeting comment to identify substantive comments through a process referred to as content analysis. Through this process, the BLM identified a total of 214 individual comments and assertions.

The comment organization of the letters, e-mails, and public meeting written and oral comments are shown in Table M-1 below.

1.5 Content Analysis Annotation

The Content Analysis process was used to identify significant comments and assertions that may require a response from the BLM. Public comments and assertions are identified electronically on the original correspondence (Appendix N), along with their unique identifier by highlighting individual comments. The letter/e-mail identifier, comment number, and assertion number are annotated in the left margin of the correspondence. Letters and e-mail may contain comments similar to other letters. In these cases, the BLM may refer to a previous response, e.g., “Please refer to our response to letter number (insert the appropriate letter number).”

Table M-1. Log of Comments Received

Unique Comment Numbers	Date Received	Agency, Organization, or Individual
Comment Letters		
001	3/5/2010	Mojave Desert Air Quality Management District
002-006	3/3/2010	CalTrans, District 8
007-014	5/20/2010	Defenders of Wildlife
015-020	5/13/10	San Bernardino County
021-147	5/20/10	Robyn C. Purchia, Adams Broadwell Joseph & Cardozo, Attorneys at Law
148-178	5/27/10	Chuck Bell, Lucerne Valley Economic Development Association
179-182	5/18/10	Chevron Energy Solutions
183	5/20/10	Chevron Energy Solutions
184-241	5/20/10	United States Environmental Protection Agency
242-252	5/13/10	Natural Resources Defense Council, Sierra Club, and The Wilderness Society
Emails		
501-502	2/13/2010	Edward Wood
503	4/11/2010	Douglas Metcalf
Public Meeting (Oral Comments)		
901-07	3/9/2010	Adams Broadwell Joseph & Cardozo, Attorneys at Law
908-913	3/9/2010	Bill Lembright
914-919	3/9/2010	Chuck Bell, Lucerne Valley Economic Development Association
920-925	3/9/2010	Dinah Shumway
Public Meeting (Written Comments)		
926	3/9/2010	Mike Hawkins, Friends of Giant Rock OHV Club
927-928	3/9/2010	Millie Rader

2.0 Key Issue Summary

Comments received by the BLM during the scoping process provided a mechanism for identifying key issues regarding the Proposed Action and these comments are provided in the Scoping Summary Report (Appendix A). Comments received during public review of the Lucerne Valley Solar Project DEIS are contained in this appendix. In order to assist the reader in understanding these key issues and concerns, the following sections provide a summary of comments by major issue. Section 3.0 of this appendix also provides a discussion of how many public comments were directed to each of the major issue areas that are summarized below.

2.1.1 REGULATORY COMPLIANCE

NEPA and CEQA Compliance

Commenters on the DEIS expressed concerns that the project does not comply with the requirements of NEPA or the California Environmental Quality Act (CEQA) and that the BLM may not approve the CDCA Plan amendment or ROW until an adequate joint Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) is prepared and circulated for public review and comment. Other commenters indicated that the BLM did not take a "hard look" at the environmental consequences of the Proposed Action and that the level of detail must be sufficient to support reasoned conclusions by comparing the amount and the degree of the impact caused by the Proposed Action and the alternatives.

Federal and State Laws

Comments on the DEIS noted that the project will require approval of a streambed alteration agreement from the CDFG and waste discharge requirements (WDRs) by the Regional Water Quality Control Board (RWQCB) and that the project will require approval under CEQA before it can proceed with construction. Other comments recommended that the BLM work with the CDFG and RWQCB to facilitate the state-level permitting process and that a joint EIS/EIR must be prepared to avoid duplication of government materials and resources.

2.1.2 PROJECT ALTERNATIVES

Private Land Alternative

A commenter on the DEIS expressed concerns about the relatively small size of the proposed project (516 acres) and the relatively large amount of potentially suitable and available private and public lands needed to support the project. The commenter recommends that the BLM examine a private lands alternative.

Alternative Sites

A commenter on the DEIS expressed concerns that the BLM's decision not to consider alternate sites is impermissible because it is based on an arbitrarily narrow purpose and need statement, and the BLM must consider reasonable alternatives. One commenter indicated that the DEIS violates NEPA's basic requirement to consider alternatives. A comment from the pubic meeting recommended land east of the Twentynine Palms Marine Base as an alternative project location. Another commenter indicated that the "private land" alternative was not considered and no rationale was provided, while First Solar and Next-Era found large fallowed parcels in Lucerne Valley, with a lot more existing all the way to Palmdale. Other commenters stated that the BLM should consider an alternate site on disturbed land north of the Proposed Action site, as well as in Kings and Fresno Counties, where there is an extensive amount of abandoned farmland that would facilitate long-term energy generation, while reducing the project's impacts on environmental resources. Another commenter indicated that the BLM must evaluate siting the Proposed Action on these alternate sites, such as pre-disturbed/fallowed private land.

Alternative Site Design

A commenter on the DEIS indicated that the BLM must consider an alternative site design with four sides. Concerns were raised that the Proposed Action, as well as Alternative 4 (Modified Site Layout) and Alternative 5 (Smaller Project), have twelve sides and a very high boundary-to-area and that the BLM should consider a project design with four sides to reduce the boundary-to-area ratio and minimize impacts on biological resources.

Alternative Design for Drainage

Commenters on the DEIS indicated the BLM must consider an alternative site design that avoids or significantly minimizes impacts on the blue-line drainages that run through the project site; alternative site designs would also allow water from project activities to be captured in bioswales and discharged into dry washes.

Alternative Technology—Rooftop Solar

A commenter on the DEIS recommended the installation of solar panels on such surfaces as rooftops and parking lots throughout Southern California as a viable alternative to the further commitment of public land resources to subsidize urban areas.

2.1.3 PROJECT DESCRIPTION

Project Description

Commenters on the DEIS raised concerns that the proposed project would be located on a small isolated parcel of public land surrounded by private land and that the project boundary east of the Santa Fe Fire Road may have been mechanically altered by former mining claim assessment work. Other concerns were that approval of Phase I would be premature without knowing the transmission requirements upgrading existing line or a new one for both of the project phases combined.

Commenters expressed concerns about inconsistent descriptions about the Proposed Action site as both "occupied" and "vacant" and indicated that the BLM must provide a consistent description of the site so that a meaningful comparison of the alternatives and their environmental consequences would be possible. Another commenter indicated that within Table 1-1 of the Draft EIS, the statement "The site chosen is within a 'development corridor'" is not consistent with the Lucerne Valley Community Plan's locations for "industrial" development and thus is misleading and the entire table includes very weak rationale.

The Applicant commented that the phasing of the project has been revised to defer construction of the eastern portion of the site until Phase II. This would defer the design and construction costs in the area susceptible to the greatest surface water flows, as well as the potential impacts and mitigation associated with grading and development of this area. Comments also indicated that if the transmission line capacity was not upgraded by SCE, this portion of the site would not be developed, avoiding the potential impacts altogether. The Applicant also commented that the site layout plans have been revised to reflect both fixed tilt and single axis tracker systems.

Project Impacts

Commenters indicated that the discussion of impacts must include both "direct and indirect effects" (secondary impacts) of a proposed project and that the impacts analysis should discuss the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity and any irreversible or irretrievable commitments of resources that would be involved in the proposal should it be implemented. There were also concerns that the DEIS does not consider all of the project's significant and foreseeable environmental impacts on biological resources, water resources, transmission and communication systems, mineral resources, noise, hazards, and cultural resources.

Site Preparation

The Applicant commented that cutting vegetation at four inches above the ground would not be practical for construction and that vegetation would be removed. The Applicant explained approximately 420 acres of the Proposed Action site would be rough graded or grubbed and scarified but that the general slope and undulations would be preserved.

Decommissioning

Commenters expressed concerns about project decommissioning and recycling of facilities, including specific measures for reclamation and bonding to ensure that the site would be completely cleaned up and returned to its original condition. Another commenter indicated that BLM leases should include provisions for cleanups that are now a problem with abandoned mines rather than leaving this public cleanup for future generations.

Restoration Plan

Commenters expressed concerns that a complete project restoration plan is prepared so that decision makers and the public will understand all of the Proposed Action's impacts. Concerns were raised about what plants would be used for revegetation, how drainages would be restored, whether wildlife would be reintroduced, and what other restoration would be implemented.

Energy Transmission and Telecommunication Systems

Commenters raised concerns that the BLM did not consider all of the project's impacts associated with new transmission and communications systems. There were concerns about where utility poles would be placed, whether an off-site corridor must be established, and what impacts would be associated with installing new communications systems. Commenters expressed concerns that all significant impacts associated with the Project's energy transmission be considered, including interconnection to the Southern California Edison (SCE) 33-kV transmission line, upgrades to the existing line, "reconductoring" (i.e., replacing the existing wire with heavier wire and reusing the existing cross arms and insulators) the existing SCE transmission line back to the Cottonwood Substation, and actual transmission line capacity that would have to be verified by a transmission study. Concerns were raised about addressing impacts from the transmission upgrades, reconductoring, use of machinery that may have direct and indirect impacts on biological resources, traffic, visual resources, noise, and air quality. Commenters also noted that the DEIS must discuss all impacts of installing any new transmission poles off-site and impacts associated with transmitting energy and those associated with connecting to the Cottonwood Substation.

Another commenter indicated that a transmission study must be conducted and made available to the public before the project is approved and that, without a transmission study, the BLM cannot conclude that energy from the Proposed Action would not require significant transmission upgrades.

2.1.4 PURPOSE AND NEED

Commenters were concerned that the purpose and need statement should focus on the need to generate greater amounts of electrical energy from renewable energy sources, reduce dependency on carbon-based fuels, and meet the minimum state and federal renewable energy standards. Another commenter raised concerns about the BLM having a narrowly defined goal of "processing a ROW application," whereas the Applicant has two goals: promote solar technology and develop 45 megawatts of energy on public land to maintain a profit margin.

2.1.5 AESTHETICS/VISUAL RESOURCES

A commenter noted that State Route 247 is designated as a scenic route in the County of San Bernardino General Plan and because the project uses an array configuration approximately six feet high, it would not block the views of mountains for drivers along State Route 247. Thus the Proposed Action would be consistent with the scenic designation.

2.1.6 AIR QUALITY

Commenters expressed concerns that the "heat sink" and albedo "change" effects need to be assessed, especially for the larger projects and those close to residential uses and that the energy and CO_2 emissions required for manufacturing panels, structures, and construction, plus the additional loss of "multiple use" on the mitigation/compensation land—compared to other energy sources—need to be assessed from a more global perspective. Another commenter said that the proposed mitigation measures for air quality (MM AQ-1 and MMAQ-2) represent feasible mitigation.

2.1.7 BIOLOGICAL RESOURCES

Comments received on the DEIS included assertions that the BLM's mitigations were not adequate and that disturbance would result in reduced habitat quality and wildlife populations. Concerns were expressed for a range of wildlife species, including desert tortoise, Joshua trees, rare plants, mesquite plants, creosote rings, Mojave ground squirrels, burrowing owls, raptors, and golden eagles. Another commenter said that the DEIS does not propose sufficient mitigation measures to reduce or avoid the project's impacts, such as "increased predation of reptiles, small mammals, and small birds around the Proposed Action site because raptors would use the infrastructure for perches" from predatory ravens that are a leading cause of mortality for the desert tortoise; however, the DEIS does not disclose how perching would be discouraged on the tortoise-proof fence and the transmission poles.

Desert Tortoise

Commenters said that the project site supports a natural plant and animal community composed largely of common species of plants and animals, with a relatively low number of BLM sensitive or special status species. Commenters indicated that the threatened desert tortoise occurs in the area in low densities; one desert tortoise was observed within the extreme southeastern corner of the proposed project area, and a few desert tortoises were observed in this same general area but outside the project boundary, within the surveyed buffer zone, which is not considered an insurmountable issue for the project developer. Another commenter said that it is essential that the BLM consult with the US Fish and Wildlife Service (USFWS), in accordance with Section 7 of the Endangered Species Act, 16 USC, Section 1536(a) (2), and if necessary obtain an incidental take permit. Avoidance of desert tortoises in this area by a slight modification of the project layout may prove advantageous because it may preclude the need for their relocation or translocation. Another commenter said that the slight modification to avoid direct impact on the desert tortoise, the modified layout described in Alternative 4 (Modified Site Layout), may be advantageous to the project proponent as a means of reducing dust accumulation on PV panels generated from vehicles using the Santa Fe Fire Road, and also in providing a visual screen of natural vegetation around the perimeter of the project.

Commenters raised concerns regarding mitigation for threatened/endangered species. The commenter supports project development in a manner that optimizes future economic opportunity by minimizing land set-asides and instead focusing on funding conservation, habitat restoration, and species recovery. The DEIS in Section 4.6 is consistent with San Bernardino County's approach by first requiring avoidance of impacts via several mitigation measures in BIO-1, BIO-6, and BIO-11, and invasive weed removal in BIO-2. Mitigation measure BIO-12 discusses compensatory mitigation and sensibly requires a 1:1 mitigation ratio for impacts on desert tortoise that may be achieved via either land replacement or an in lieu fee. However, rehabilitation of habitat during decommissioning is not clearly addressed in either the biological impact analysis or the project description, specifically Section 2.2.3.6, which describes decommissioning.

Commenters raised concerns about the tortoise-proof fence's impacts on tortoise foraging and breeding migrations and an increase in the presence of natural predators, which may cause significant stress on the species and mortality. Another commenter indicated that a translocation plan with specific information about the translocation area, how and when the tortoises would be moved, and who would monitor their relocation and the long-term effectiveness of tortoise relocations to adjacent areas did not seem adequately addressed. Comments also raised concerns that transmission lines upgrades should include "raven proof" devices to the extent feasible, ravens being the biggest threat to juvenile tortoises.

BLM Consultation with FWS and DFG

Commenters on the DEIS raised concerns that there is no evidence that consultation has been completed with the USFWS and the California Department of Fish and Game (CDFG) to address impacts on desert tortoise on the project site. Commenters also stated that the DEIS does not disclose the environmental effects of the USFWS's issuance of a biological opinion and incidental take permit and any of the terms and conditions the USFWS and CDFG require the Applicant to implement.

Impacts on Vegetation

Comments on the DEIS raised concerns about providing a complete description of activities that could have long term affect to vegetation such as mowing and grubbing. Another commenter indicated that the Alternative 4 (Modified Site Layout) was a viable option that would allow a buffer and that on-site location and maintenance of transplanted yuccas/Joshua trees would be more reliable than off-site, which would likely result in 50% mortality at best. Concerns were that minimal grading, vegetation mowing, and decomposed granite or small gravel placement would help to stabilize the site and reduce weed infestations and that mowing was worth pursuing.

Commenters raised concerns that shaded ground would become devoid of vegetation and root structure and that the partially shaded area would likely generate more weeds than native vegetation. Other concerns were raised about impacts on Joshua trees and how these plants would be flagged for salvage and removed. Comments on the DEIS were raised with regard to requiring the Applicant to conduct an adequate plant survey so that impacts on rare plants are identified and mitigated. Other comments indicated that there was no discussion about the Project's impacts on mesquite plants and that the impacts on creosote rings should be evaluated in accordance with the Plant Protection and Management Ordinance in the San Bernardino County Development Code.

Mohave Ground Squirrel

Commenters on the DEIS expressed concerns that construction and operation could significantly impact Mohave ground squirrels which could trigger "incidental take" provisions. Other commenters indicated that the Mohave ground squirrels have been observed within four miles of the project site. Commenters said that the Applicant surveys were inconsistent with CDFG guidelines. Another commenter indicated that the USFWS is considering listing the Mohave ground squirrel as an endangered species under the ESA, and the BLM would need to consult with USFWS and request a biological opinion and incidental take permit before conducting any activity that may harm the species to ensure compliance with the federal ESA.

Avian Species

Commenters raised concerns that although no burrowing owls were observed during the surveys, the species may still be present on the site and that it is important that the BLM specifically determine whether the western burrowing owl is present on the site in order to mitigate potentially significant impacts. Commenters raised concerns that, although no Golden eagles were identified during the avian point-count survey, that the DEIS should include an impact analysis or mitigation measures. One commenter indicated that the USFWS is developing protocol for Golden eagle surveys and because nesting sites are within ten miles of the project site and typical prey species occur on the project site the BLM should consult with the USFWS and conduct a focused survey for this species.

Noise Impacts on Sensitive Species

Commenters on the DEIS raised concerns that all direct and indirect noise impacts on sensitive species and sensitive receptors were not considered. The DEIS notes that sensitive receptors, such as nearby residences and special management areas, may be impacted by construction and operation noise from the project. The DEIS should include a discussion about construction and operation noise impacts on wildlife; sounds that are rare or even minor may have a negative impact on wildlife and sensitive species in the area.

Mitigation for Biological resources

Commenters on the DEIS raised concerns about the project's effect on biological resources, mitigation ratios and compensation. Commenters were also concerned with the ultimate loss of "multiple uses" on said parcel that might be purchased and any in-lieu fee might be directed. Commenters also said that off-site mitigation/compensation requirements resulting from this project would need to be fully explained.

2.1.8 CULTURAL RESOURCES

Commenters raised concerns that all impacts on cultural resources were not addressed and that the BLM must consult with all tribes that have ties to the land to determine if there are historical resources that have not been identified. Another commenter raised concerns that the Proposed Action conflicts with Section 106 of the National Historic Preservation Act.

2.1.9 CUMULATIVE IMPACTS

Impacts on Resources

Commenters expressed concerns that cumulative effects of the project, when coupled with the additional ongoing and proposed development, could have significant cumulative impacts on air, water, land, biological, and cultural resources and transmission capacity.

Impacts on the Character of Lucerne Valley

Public meeting commenters raised concerns about the County looking at the whole of these projects because "we're getting buried in the parts since there are too many of them, and if they all get approved the community would lose their land-use character—and their land-use configuration." Another commenter indicated that the projects on BLM lands and on private land project should be reviewed in unison to evaluate cumulative effects.

Impacts on the Desert Tortoise

Commenters indicated that, given the protected status of desert tortoises, the BLM must adequately evaluate the project's cumulative effects on the desert tortoise from other projects that would occur within a six-mile radius and must compare the Proposed Action's cumulative effects with the reduced cumulative effects of Alternative 5 (Smaller Project) and the use of alternate sites.

2.1.10 HAZARDOUS MATERIALS/WASTE

Comments included concerns about impacts from hazardous materials and potential health risks associated with human contact with areas where mining was previously conducted. Another commenter recommended that the BLM conduct a Phase I Environmental Site Assessment to evaluate these potential human health risks, and if the Phase I Assessment finds the mining debris to represent potential human health risks, a Phase II Environmental Site Assessment should be conducted to include sampling of the debris. Another comment indicated that the BLM must conduct a Phase I assessment and include the results in a revised DEIS that is circulated for public review. Comments also raised concerns that the BLM must identify which herbicides would be used and must disclose any studies that prove the herbicides are harmless, or take a hard look at the Project's impacts on human health and biological resources.

2.1.11 LAND USE AND MINERALS

Land Use

Public meeting commenters on the DEIS indicated that projects on public land do not serve the public, and there are "plenty of other projects around here on fallow private land; private landowners can do whatever they want if it conforms with community standards." Another comment on the DEIS regarding Alternative 5 (Smaller Project) indicated that existing structures south of Zircon Road would not require the destruction and removal of these structures, but the buildings north of Zircon Road would be destroyed and workers may be exposed to asbestos, lead paint, and other hazardous materials. In addition, the visual and noise impacts on on-site sensitive receptors should be assessed. Another comment indicated that depending on the location of the occupied buildings, Alternative 4 (Modified Site Layout) may reduce visual impacts on these on-site sensitive receptors.

Mineral Resources

Commenters indicated that mineral extraction may be a beneficial and valuable use of the site; gold, copper, silver, lead, sand, gravel, stone, and uranium have all been prospected, produced and/or processed within five miles of the Project site. Other commenters indicated that the description of mineral resources on the site needs to be adequately determined and consistently described so that all of the impacts would be disclosed to the public and decision makers. Concerns were also raised that the project would restrict access to mineral resources and result in an irreversible and irretrievable commitment of mineral resources.

2.1.12 RECREATION AND HUNTING

A comment received to the DEIS included the assertion that hunting would be an allowed use on the Proposed Action site, up until construction begins.

2.1.13 SOCIAL AND ECONOMIC CONSIDERATIONS

Commenters raised concerns about the social and economic impacts of the Proposed Action, including the cost of operations and maintenance, compatibility of the project with surrounding residential properties, and the adverse impact on land values. Commenters also expressed concern about use of local workforce and locally available materials, such as cement/concrete/aggregate, that can be used for developing the project. Other comments expressed concern that the projects are not necessarily "beneficial" to local communities, and the applicant could be the lead in devising a method to "arrange" the purchase of materials in San Bernardino County, with sales tax benefiting the county, and Lucerne Valley roads that get "hammered" by all the truck traffic associated with these projects. Commenters also indicated that these projects are not feasible without taxpayer subsidies, that they are expensive and inefficient, and that they take away public use from public lands. Another comment raised concerns about the impact on those who property taxes for the privilege of living in this clean, beautiful desert.

2.1.14 TRANSPORTATION AND TRAFFIC

Commenters raised concerns that Santa Fe Fire Road was probably not a county-maintained road and the Applicant should consult with the County of San Bernardino and CalTrans to establish legal access and obtain any required permits. Other commenters indicated that construction of the project would result in short-term increases in traffic due to the construction deliveries of materials and that the impacts on the level of service for the routes of travel should be evaluated. Another comment indicated that a right-turn lane on Hwy 247 would provide safer egress in this area of high-speed traffic during the construction phase.

2.1.15 UTILITIES AND SERVICES

One commenter indicated that the closest available emergency facility are hospitals in Apple Valley or Victorville and not Big Bear.

2.1.16 WATER RESOURCES

Impacts on Water Resources

Commenters raised concerns that impacts associated with an increased operational water use underestimated the amount of water the Applicant would need to clean the solar panels. There were concerns that there may be an irreversible and irretrievable commitment of water resources and that large amounts of operational water could cause runoff that may create ephemeral ponding and/or flooding. Another commenter indicated that the Applicant could mitigate runoff by implementing bioswales and/or catchment basins; the basins could remove silt and pollution from surface runoff water and provide another source of refuge, cover, and food for wildlife. Another comment concerned the Proposed Action's impacts on water users, the groundwater aquifer, and flooding that would result from using at least 270,000 gallons of water per year to clean the solar arrays. The Applicant commented that the Proposed Action would maintain existing flow patterns and velocity for surface water runoff from the site, that the potential for flooding would not change as a result of the Proposed Action, and that a finalized hydrology study would be provided.

Water Demand

Pubic meeting commenters indicated that that the project site is sitting on top of Mojave Water Agency pipeline that goes to the Morongo Basin. They stated that "in order to reach our Morongo basin in Yucca and the Joshua Tree area, and there are turnouts available, so the construction water may be able to a work out a deal with the Mojave Water Agency and not have to use good ground water for that purpose." Another comment was that "we are an adjudicated basin, and the water can be hauled within the basin. Domestic water could be hauled … to the site. You shouldn't need much after construction, unless they're going to wash the panels now and then."

Water Source and Usage

Public meeting commenters indicated that the water source needed to be identified so that the public could ascertain whether that source has sufficient capacity to service the Proposed Action and also how the water would be conveyed from a possible off-site source to the project area. In addition, the DEIS should describe whether that will be potable water or nonpotable water, and what federal, state, and local permits are required for the project to receive the water.

Commenters also expressed concern about the amount of water the Proposed Action and alternatives would need during construction, operation, and maintenance. Concerns were raised that water usage for both construction and operation was underestimated and that solar panels could require approximately 270,000 gallons per year for maintenance, which would be six times more than what the BLM determined the Proposed Action would require in the DEIS. Commenters raised concerns that a specific water source of construction and maintenance water for the Proposed Action is not disclosed in the DEIS. Another commenter indicated that using water from any of these sources raises a myriad of potentially significant effects and legal issues that have not yet been addressed, including impacts on groundwater from increased extraction, impacts on state water, impacts on biological resources, land use, and air quality from construction of pipelines, availability and reliability of water supplies, legal entitlements, need for further rights-of-way, effects from trucking water to the site, and others. Concerns were also raised regarding the Proposed Action's need for large amounts of construction and operational water, which would likely exacerbate overdraft conditions and cause an overall decline in water levels in the region.

Groundwater Assessment

Commenters expressed concern about water usage and indicated that the County policy is to require a groundwater assessment report if a Proposed Action anticipates using 10 acre-feet per year or more of groundwater. The Proposed Action appears to fall below that threshold for both construction and for operations.

Hydrology Report

Commenters raised concerns about preparing a complete and final hydrology report and stormwater pollution prevention plan (SWPPP) before approving the Proposed Action; the information contained in the hydrology report and the SWWPP would help the public understand and assess the water table, the natural flow pattern on-site and off-site, and the Applicant's measures to address flooding.

Jurisdiction of Water/Streambed Alteration Agreement (Section 1602)

Commenters expressed concerns that the construction of the Proposed Action would alter the natural flow patterns of those streams where concrete pads and structures are installed and within the solar array field. There was concern that the Proposed Action would temporarily and permanently impact these streams, and that the CDFG must issue a streambed alteration agreement before the Applicant impacts these drainage systems.

Impacts on Drainage Systems

Comments on the DEIS expressed concerns that the Proposed Action 's impacts on drainage systems is incomplete and inconsistent and a complete description of the Proposed Action's impacts on natural drainage systems should be provided as well as mitigation, where feasible. Another commenter indicated that the DEIS must also describe what fill material the Applicant would use to modify the drainages. Commenters also expressed concerns about storm drainage on the project site and whether stormwater would be drained from the site through newly constructed drainages or through natural on-site drainages.

Wastewater Discharge Requirements

Commenters expressed concerns about the Proposed Action's compliance with the WDRs of the RWQCB, pursuant to the California Porter Cologne Water Quality Control Act. Another commenter indicated that the Proposed Action may also discharge at least 270,000 gallons of non-stormwater runoff when the solar panels are cleaned, and because the Proposed Action would discharge stormwater and non-stormwater into state waters, either the Colorado River Basin RWQCB or the Lahontan RWQCB must prescribe WDRs. One commenter indicated that the jurisdictional delineation does not contain sufficient information to adequately and specifically determine jurisdiction of the waters on and impacted by the project site.

Specifically, the delineation relies on incomplete soil data. Another comment indicated that further soils surveys would be required to support the findings in the jurisdictional delineation.

2.1.17 MITIGATION REQUIREMENTS

Public meeting commenters expressed concerns that these Proposed Actions are not going to be held to the same standards that the mining industry is held to. Concerns were raised that habitat would be obliterated, public land would be disturbed, the mitigation ratios and revegetation plans are unknown, and the applicant should bear the expense for mitigation and restoration.

2.1.18 GENERAL

Comments included environmental degradation, loss of jobs caused by construction moratoriums, elimination of protected species and habitat, and reduced freshwater. Concerns were raised that Chevron Energy Solutions representatives have not participated in community meetings, unlike the representatives of every other local solar/wind proposed action in the permitting process, that the town was being overrun with these types of proposed actions, and that the BLM's programmatic process would identify the limited areas available and suitable for solar plants and the need for these types of proposed actions. Comments also included requests to meet with the Applicant for a better explanation of the Proposed Action's tax revenue benefit, specifically the annual taxes from its "leasehold interest," and for answers to questions about Proposed Action tax incentives and revenues deducted from what the County receives from BLM as "payment in lieu of taxes." Another comment included a request to meet with the Applicant and the BLM before the EIS is finalized and a decision is made on the permit. A commenter indicated that the BLM must revise the DEIS to remove any inconsistent and inaccurate information about alternatives and to provide a reasonable, good faith, and objective presentation of the affected environment and environmental consequences of the Proposed Action and its alternatives.

General Opposition for the Proposed Action

Public meeting comments on the DEIS included general opposition to the Proposed Action because these proposed actions are going to raise the cost of living, tighten up their freedoms, and decimate the community. Another commenter indicated no solar and wind projects should be approved until something gets agreed on locally and nationally that this is even practical. Another commenter raised concerns that people who live in the desert enjoy the views, and the Proposed Action should be relocated to an area that is not inhabited.

General Support for the Proposed Action

Commenters expressed support for the Proposed Action and indicated that the Applicant appears to have identified a site with excellent solar resources, close to existing transmission and other infrastructure, and with limited biological conflicts, and that Chevron should be commended for its efforts in working closely the BLM staff to identify this "sustainable" site for the Proposed Action. Public meeting comments included general support for Alternatives 3 (Proposed Action) and Alternative 4 (Modified Site Layout).

3.0 Analysis of Letters and Comments

As noted above, the BLM received twelve comment letters, including two e-mails and eight hard copy comment letters, and two written comments, and four oral comments from the public meeting. The comments were evaluated further, as illustrated in Tables M-2 and M-3.

Table M-2. Number of Commentators and Individual Comments

Individual Letters Comments	
001	1
002-006	5
007-014	8
015-020	6
021-147	128
148-178	31
179-182	4
183	1
184-241	57
242-252	11
Subtotal	***252***
Individual E-mail Comments	
501-502	2
503	1
Subtotal	***3***
Individual Oral Public Meeting Comments	
901-907	7
908-913	6
914-9119	6
920-925	6
Subtotal	25
Individual Written Public Meeting Comments	
926	1
927-928	2
Subtotal	***3***
Total Individual Comments	***283***

Comments by Key Issue

The BLM placed the individual comments into categories, based on the key issue addressed in the comment. Table M-3 shows a breakdown of comments by key issue.

Table M-3. Individual Comments by Key Issue

Key Issue	Number of Comments
2.1.1 Regulatory Compliance	13
2.1.2 Proposed Action Alternatives	29
2.1.3 Proposed Action Description	26
2.1.4 Purpose And Need	22
2.1.5 Aesthetics/Visual	1
2.1.6 Air Quality/Climate Change	8
2.1.7 Biology	48
2.1.8 Cultural Resources	3
2.1.9 Cumulative	21

Table M-3. Individual Comments by Key Issue

Key Issue	Number of Comments
2.1.10 Hazardous Materials	5
2.1.11 Land Use	4
2.1.12 Recreation	1
2.1.13 Socioeconomics	10
2.1.14 Transportation And Traffic	7
2.1.15 Utilities And Services/ Emergency Services	1
2.1.16 Water and Hydrology	59
2.1.17 Mitigation Requirements	1
2.1.18 General	24
Total Number of Comments	**283**

Comment Organization

For this Final EIS, all comments from letters received on the DEIS can be found in Appendix M, and the individual comments and the responses to each comment can be found in Appendix N.

4.0 Comment Letters

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14306 Park Avenue, Victorville, CA 92392-2310
760.245.1661 • fax 760.245.2699
Visit our web site: http://www.mdaqmd.ca.gov
Eldon Heaston, Executive Director

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March 3, 2010

Greg Thomsen
BLM California Desert District Office
22835 Calle San Juan de Los Lagos
Moreno Valley, CA 92553

Project: Chevron Energy Solutions Lucerne Valley Solar Project

Dear Mr. Thomsen:

The Mojave Desert Air Quality Management District (District) has received Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project. Chevron Energy Solutions has requested a 516-acre right-of-way authorization to construct and operate a 45-megawatt solar photovoltaic project and connect it to an existing Southern California Edison 33 kV distribution system on public lands located approximately 8 miles east of Lucerne Valley. The proposed project would include a solar array, switchyard, a control and maintenance building, and parking area.

The District has reviewed the environmental documentation for the project and concurs that the proposed mitigation measures for Air Quality (MM AQ-1 and MM AQ-2) represent feasible mitigation. Comment 001

Thank you for the opportunity to review this planning document. If you have any questions regarding this letter, please contact me at (760) 245-1661, extension 6726, or Tracy Walters at extension 6122.

Sincerely,

Alan J. De Salvio
Supervising Air Quality Engineer

AJD/tw Chevron LV Solar Project.doc

City of Adelanto | Town of Apple Valley | City of Barstow | City of Blythe | City of Hesperia | City of Needles | County of Riverside | County of San Bernardino | City of Twentynine Palms | City of Victorville | Town of Yucca Valley

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
DISTRICT 8
PLANNING AND LOCAL ASSISTANCE (MS 722)
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Flex your power!
Be energy efficient!

March 03, 2010

Mr. Greg Thomsen
California Desert District Office
Bureau of Land Management
22835 Calle San Juan de los Lagos
Moreno Valley, CA 92553

Dear Mr. Thomsen:

Chevron Energy Solutions Lucerne Valley Solar
08-SBd-247-PM 36.514

The California Department of Transportation (Caltrans) has reviewed the Chevron Energy Solutions (Applicant) Lucerne Valley Project Draft Environmental Impact Statement (DEIS) and Amendment to the California Desert Conservation Area Plan (Project). The proposed Project is to develop a 45-megawatt photovoltaic solar plant and associated facilities on 516 acres of federal land managed by the Bureau of Land Management.

This Project would involve the Applicant improving Santa Fe Fire Road to access the project site via State Route 247 (SR-247). However, it is unlikely that Santa Fe Fire Road is a county maintained road and considered as a legal access to SR-247. We recommend that the Applicant consults with the County of San Bernardino Land Development, Land Use Services Department and this Office to warrant a legal access to SR-247 and county maintained road. Comment 002

Design and construction plans to establish Santa Fe Fire Road shall meet county's standards and connection to SR-247 shall meet Caltrans Highway Design Manual. Review and approval of such plans are contingent to Encroachment Permits. Comment 003

When improving Santa Fe Fire Road, all existing tributary areas, area drainage facilities and runoff volumes having an impact to SR-247 must be identified and analyzed. Hydrology study should be considered. Comment 004

The construction of said Project will be completed in two phases which would result in short-term increases in traffic volume of a maximum of 90 trips per day (45 morning and 45 evening trips) due to the construction labor force assuming they all drive separately. This volume is less than significant. Comment 005

However, the Project should address the number of truck trips per day pertinent to delivering the materials to construct the solar project. The State is the owner and operator of SR-247 and is concern about the impact that the delivery trucks will have onto the facility during the construction phases.

Comment 006

We appreciate the opportunity to offer our comments concerning this project. If you have any questions regarding this letter, please contact David Lee at 909-383-6908 or me at 909-383-4557.

Sincerely,

Daniel Kopulsky

DANIEL KOPULSKY
Office Chief
Community Planning/Local Development Review
Division of Planning

cc: Gia Kim, Office Chief, County of San Bernardino Land Development
Carrie Hyke, Principal Planner, County of San Bernardino Land Use Services Department
Roxie C. Trost, Field Manager, Barstow Field Office, Bureau of Land Management

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California Office
1303 J Street, Suite 270 | Sacramento, CA 95814 | tel 916.313.5800 | fax 916.313.5812
www.defenders.org

May 20, 2010

Greg Thomsen
Bureau of Land Management
California Desert District Office
22835 Calle San Juan de Los Lagos
Moreno Valley, CA 92553
Via email to *LucerneSolar@blm.gov*

Re: Comments on the Draft Environmental Impact Statement for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project and Draft California Desert Conservation Area Plan Amendment, 75 Fed. Reg. 6057 (Feb. 5, 2010)

Dear Mr. Thomsen:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the proposed Chevron Energy Solutions Lucerne Valley Solar project. These comments are submitted on behalf of Defenders of Wildlife (Defenders), a non-profit public interest conservation organization with more than 1,000,000 members and supporters nationally, 200,000 of whom reside in California.

Defenders is dedicated to protecting all wild animals and plants in their natural communities. To this end, we employ science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions in order to impede the accelerating rate of extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

Defenders strongly supports the emission reduction goals found in the Global Warming Solutions Act of 2006, AB 32, including the development of renewable energy in California. We also recognize that to succeed in meeting State and Federal mandates for generation and utilization of renewable energy, some priority projects will be located on public lands managed by the Bureau of Land Management (BLM). We urge that in seeking to meet our renewable energy portfolio standard in California, project proponents locate and design their projects in the most sustainable manner possible. Thus, renewable energy projects should be placed in the least environmentally harmful locations, near existing transmission lines and on or adjacent to already disturbed lands including idle agricultural fields, industrial sites, previous mining sites and lands with little or no long-term potential for sustaining healthy biological resources. Based on our review of the project site and the DEIS, we believe this project meets many of these "sustainability" criteria.

Comment 007

National Headquarters
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Proposed Project Description[1]

Chevron Energy Solutions applied to the Bureau of Land Management (BLM) for a right-of-way on public lands to construct a solar photovoltaic power plant facility on approximately 516-acres of BLM managed land eight miles east of the community of Lucerne Valley. When completed the facility will generate 45 megawatts of electricity. The project proponent appears to have identified a site with excellent solar resources, close to existing transmission and other infrastructure, and with limited biological conflicts. Chevron should be commended for their efforts in working closely the BLM staff in identifying this "sustainable" site for their proposed project.

Comment 0

Comments on the Proposed Project and Draft Environmental Impact Statement (DEIS)

Based on our field inspection of the proposed project site, an in-depth knowledge of the California Desert Conservation Area Plan, as amended, and review of the DEIS, we considers Alternative 3 (Proposed Action) or Alternative 4 (Modified Site Layout) appropriate. Either of these alternatives would result in an environmentally acceptable and sustainable project that generates electrical power using solar energy, and would contribute to the State and Federal mandates for generation and utilization renewable energy.

Comment

The proposed project is located on a relatively small and isolated parcel of public land surrounded on three sides by private land. Paved Highway 247 and an existing SCE transmission line is very near the proposed project area. We noticed that public lands within the project boundary east of the Santa Fe Fire Road have been mechanically altered in several areas, probably associated with former mining claim assessment work.

Comment

With regard to species and habitat, the proposed project site supports a natural plant and animal community comprised largely of common species of plants animals, with a relatively low number of BLM sensitive or special status species. The threatened Desert Tortoise occurs in the area in low densities, and one Desert Tortoise was observed within the extreme southeastern corner of the proposed project area, and a few Desert Tortoises were observed in this same general area but outside the project boundary within the surveyed buffer zone. We do not consider this an insurmountable issue for the project developer. It is essential, however, that the BLM consult with the U.S. Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act, 16 U.S.C. § 1536(a)(2), and if necessary obtain an incidental take permit. Avoidance of Desert Tortoises in this area by a slight modification of the project layout may prove advantageous because it may preclude the need for their relocation or translocation.

Comment 0

In addition to the slight modification to avoid direct impact to the Desert Tortoise, the modified layout described in Alternative 4 may be advantageous to the project proponent as a means of reducing dust accumulation on PV panels generated from vehicles using the Santa Fe Fire Road, and also in providing a visual screen of natural vegetation around the perimeter of the project. We urge BLM to perform a site specific needs-analysis before determining whether or not a realignment of the Zircon trail is warranted.

Comment 01

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[1] The proposed action by BLM includes an amendment to the California Desert Conservation Area Plan (CDCA) that would designate the proposed site as suitable for solar energy generation.

Though we are supportive of this project, we are concerned about the DEIS' purpose and need and alternatives analysis pursuant to the National Environmental Policy Act (NEPA). *See* 40 C.F.R. § 1502.13; 40 C.F.R. § 1502.14. To ensure reasoned decision-making and expedited project permitting, we ask that the BLM provide a broader purpose and need statement, and determine whether or not the alternatives presented and analyzed in the DEIS constitute a reasonable range of alternatives that satisfies applicable legal requirements. Comment 013

Instead of the current purpose and need statement focusing on the BLM responding to a right of way application under Title V of the Federal Land Policy and Management Act , we would recommend that the purpose and need statement focus on the need to generate and greater amounts of electrical energy from renewable energy sources so that dependency on carbon-based fuels is reduced, and to contribute to the requirement to generate certain minimum amounts of renewable energy to comply with State and federal standards.

In addition, considering the relatively small size of the proposed project (516 acres) and the relatively large amount of potentially suitable and available private and public lands necessary to support the project, we recommend that the BLM re-examine its decision to categorically determine that private land alternatives are categorically unreasonable for BLM to consider and analyze. Instead, we would recommend that the BLM examine a private lands alternative. Comment 014

Thank you for considering our comments. If you have any questions, please contact me at (916) 313-5800 x110 or via email at jaardahl@defenders.org.

Sincerely,

Jeff Aardahl
California Representative

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ND USE SERVICES DEPARTMENT

COUNTY OF SAN BERNARDINO

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DENA M. SMITH
Director

May 13, 2010

Sent by U.S. Mail and e-mail

Mr. Greg Thomsen, Project Manager
California Desert District
U.S. Department of the Interior
Bureau of Land Management
22835 Calle San Juan De Los Lagos
Moreno Valley, CA 92553

Subject: January 2010 Draft Environmental Impact Statement for Chevron Lucerne Valley Solar Project

Dear Mr. Thomsen:

Thank you for providing the January 2010 Draft Environmental Impact Statement (DEIS) for the Chevron Lucerne Valley Solar Project (Project) for our review. The proposed Project would utilize solar photovoltaic technology to generate approximately 45 megawatts (MW) of electricity on approximately 433 acres of a 516-acre site, located south of State Route 247, on both sides of Santa Fe Road east of Lucerne Valley in unincorporated San Bernardino County. The site is located entirely on public land administered by the Bureau of Land Management (BLM). The County appreciates the opportunity to comment on the DEIS.

The County has three key issues that should be addressed for each of the large scale renewable energy projects in our boundaries: endangered species mitigation, mitigation for infrastructure impacts, and addressing the impacts to County services operations costs, lost recreation and tourism revenue.

Regarding mitigation for threatened/endangered species, the County supports project development in a manner that optimizes future economic opportunity by minimizing land set-asides and instead focusing on funding conservation, habitat restoration and species recovery efforts. The DEIS in Section 4.6 is consistent with our approach by first requiring avoidance of impacts via several mitigation measures in BIO-1, BIO-6, and BIO-11, and invasive weed removal in BIO-2. Mitigation measure BIO-12 discusses compensatory mitigation and sensibly requires a 1:1 mitigation ratio for impacts to desert tortoise that may be achieved via either land replacement or an in-lieu fee. However, rehabilitation of habitat during decommissioning is not clearly addressed in either the biological impact analysis or the Project Description, specifically Section 2.2.3.6 that describes decommissioning.

Comment 015

With regard to addressing economic impacts to the County including infrastructure cost impacts and ongoing operations and maintenance costs, the County is developing a fiscal impact analysis to determine project-specific cost impacts that we will seek from project proponents. That analysis is ongoing at this time.

Comment 016

The County supports the creation of 45 construction jobs while we recognize there will be only 3 permanent jobs created by the Project. The DEIS Section 4.15.3 discusses the economic benefits from the Project: $20 million in direct spending on wages, materials and equipment, and an additional $16.1 million in indirect and induced effects related to supplies, services and household spending. Annual direct spending is estimated at $400,000 for the 30-year life of the Project (DEIS page 4.15-7).

Comment 017

In terms of aesthetic impacts, this portion of State Route 247 is designated as a Scenic Route in the County General Plan. The Project utilizes an array configuration that is approximately six (6) feet high, and grading is minimized throughout, by keeping existing vegetation at a brush cut height under the solar arrays. This is lower in height than any habitable structure would be and would not block the views of mountains for drivers along State Route 247. Further, the maintenance, rather than complete elimination, of vegetation reduces the possibility of fugitive dust and softens the view of the Project. With these considerations, the Project is not inconsistent with the Scenic Route designation. Cor 018

With regard to water usage, the County policy is to require a groundwater assessment report if a project anticipates using 10 acre feet per year (AFY) or more of groundwater. The project appears to fall below that threshold for both construction phases and for operations. Co 019

In terms of cumulative impacts, the County has received three (3) applications for solar photovoltaic projects in Lucerne Valley, since the BLM held Project scoping meetings in July 2009. A list of these projects and a map of their locations has been provided informally before and is also attached for your reference. We realize these projects were not included in the DEIS as the existing conditions baseline is generally established at the time of the Notice of Intent and scoping meetings. Co 020

Thank you for considering our comments. If you have any questions or require any information, please contact me at (909) 387-4371 with any questions.

Sincerely,

Carrie Hyke

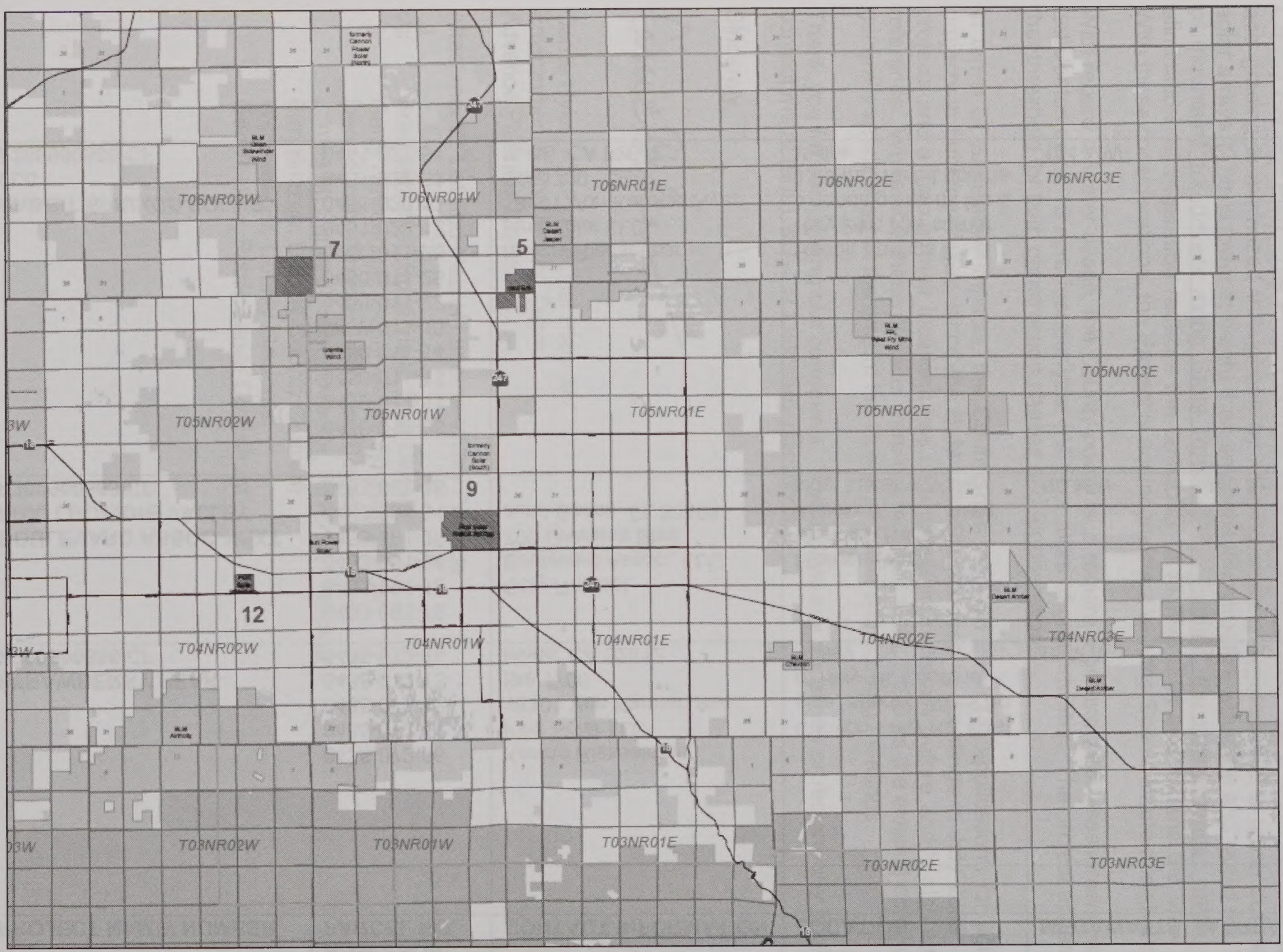
Carrie Hyke, AICP, Principal Planner
Environmental and Mining Team
Advance Planning Division

Attachments: List and Map of Lucerne Valley Projects

cc: Brad Mitzelfelt, Supervisor, First District
Gerry Newcombe, Deputy Administrative Officer
Dena Smith, Director, Land Use Services
James M. Squire, Deputy Director, Advance Planning
Bart Brizzee, Deputy County Counsel
Wes Reeder, County Geologist
Gerry Hillier, Public Lands Consultant

LUCERNE VALLEY SOLAR PROJECTS UNDER COUNTY JURISDICTION

GIS Map No.	PROJECT NAME/ NUMBER	ASSESSOR PARCEL NO.	CONTACT INFORMATION	LOCATION	MEGAWATTS	ACREAGE
12	**STRAWBERRY PEAK** **P200900655/CF**	0435-072-05 0435-072-11 0435-072-12 0435-072-13 0435-072-14	Kenzie Riesselman First Solar LLC 18101 Von Karman Ave, Ste 1700 Irvine, CA 92612	Canyon View Rd, East side, approx .25 mi So of Hwy 18, Lucerne Valley	15 MW	160 Ac
5	**BOULEVARD ASSOC-NEXT ERA/ LUCERNE VALLEY** **P200900663/CF**	0453-091-72 0453-091-12 0453-091-24 0453-091-29 0453-091-31 0453-091-48	Cory Ramsel Boulevard Assoc., LLC 700 Universe Blvd. Juno Beach, FL 33408	Haynes Rd @ Meridian Rd No, Approx 075 mi, West side, Lucerne Valley	60 MW	440 Ac
9	**RABBIT SPRINGS SOLAR, LLC** **P200900580/CF**	0450-011-08 0450-011-11 0450-011-13 0450-011-14 0450-011-15 0450-011-22 0450-011-25 0450-011-26 0451-022-12 0451-022-13 0451-022-53 0451-022-54	Kenzie Riesselman First Solar LLC 18101 Von Karman Ave, Ste 1700 Irvine, CA 92612	Rabbit Springs Rd & Hwy 247, NW corner extending one mi No & 1.25 mi West, Lucerne Valley	104 MW	922 Ac



Number	Project	Type	Acres
1	(PRE-APP) AXIO POWER HOLDINGS/ JOSHUA TREE	(S) 20 MW	157 Ac
2	(PRE-APP) AXIO-EL MIRAGE	(S) 30MW	234 Ac
3	(PRE-APP) REDCO POWER	(S) 5 MW	40 Ac
4	BOULEVARD ASSOC-NEXTERA/ KRAMER JUNCTION	(S) 20 MW	181 Ac of 313.6 Ac parcel
5	BOULEVARD ASSOC-NEXTERA/ LUCERNE VALLEY	(S) 60 MW	440 Ac
6	DAGGETT RIDGE WIND FARM, LLC	(W) 82.5 MW	380 Ac private land on 1577 Ac B
7	GRANITE WIND	(W) 8 Turbine	530.34 Ac
8	LIGHTSOURCE RENEWABLES	(S) 40 MW	380 Ac of a 402 Ac parcel
9	RABBIT SPRINGS SOLAR, LLC	(S) 104 MW	932 Ac
10	SOLTECH SOLAR, INC.	(S) 1.3 MW	11.58 Ac
11	SOLUTIONS FOR UTILITIES	(S) 3 MW	32 Ac of an 80 Ac parcel
12	STRAWBERRY PEAK	(S) 16MW	160 Ac

Alternative Energy Sites
Lucerne Valley Community Plan Area

Legend

- ▨ Pre-App County Projects
- ▨ Submitted County Projects
- ▨ Verified Solar Energy Facilities
- ▨ Verified Wind Energy Facilities
- ▨ Preliminary Solar Energy Facilities
- ▨ Preliminary Wind Energy Facilities
- ☐ Lucerne Valley Community Plan Area
- ▨ BLM
- ▨ National Park
- ▨ National Forest
- ▨ Military
- ▨ State
- ▨ Indian Land
- ▨ Other Federal Government
- ☐ County Jurisdiction

Map prepared by
Advance Planning Division
Land Use Services Department
San Bernardino County

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May 20, 2010

VIA EMAIL AND OVERNIGHT MAIL

Greg Thomsen
Bureau of Land Management
California Desert District Office
22845 Calle San Juan de Los Lagos
Moreno Valley, CA 92553
Email: LucerneSolar@blm.gov

Re: Draft Environmental Impact Statement for Lucerne Valley Solar Project

Dear Mr. Thomsen:

We are writing on behalf of the International Brotherhood of Electrical Workers, Local 477 to comment on the Bureau of Land Management's ("BLM") Draft Environmental Impact Statement ("DEIS"), prepared pursuant to the National Environmental Protection Act ("NEPA"),[1] for Chevron Energy Solutions' ("CES" or "Applicant") proposed 45-MW Lucerne Valley Solar Project ("Project" or "Proposed Action"). The Project requires an amendment to the California Desert Conservation Area ("CDCA") Plan, a right-of-way ("ROW") to construct, operate and decommission the facility, rerouting of Zircon Road, a streambed alteration agreement, certification of waste discharge requirements and incidental take permits, among other agency actions. As explained more fully below, the DEIS does not comply with the requirements of NEPA, or the California Environmental Quality Act ("CEQA") for required discretionary approvals by California State agencies. Therefore, the BLM may not approve the CDCA Plan amendment or ROW until an adequate joint DEIS/Environmental Impact Report ("EIR") is prepared and circulated for public review and comment. Comment 021

The members of Local 477 build, maintain and operate conventional and renewable energy power plants in San Bernardino County. Individual members of

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[1] National Environmental Policy Act, 42 U.S.C. §§ 4321 et seq. (2010).

Local 477 work in areas affected by environmental degradation and public health and safety risks from industrial development. Members also live in and use areas that will suffer the impacts of projects related to power plant development, including noise and visual intrusion, water and soil pollution, and destruction of archaeological or wildlife areas. Environmental degradation jeopardizes future jobs by causing construction moratoriums, eliminating protected species and habitat, using limited fresh water and putting added stresses on the environmental carrying capacity of the State. This reduces future employment opportunities. In contrast, well designed projects that reduce environmental impacts of electrical generation improve long-term economic prospects.

Comment

The DEIS for this Project is wholly inadequate, because it fails to consider, among other impacts, the cumulative effects in the region that will cause environmental degradation. As of January 2010, 244 renewable energy projects were proposed for development in California.[2] At least three of the proposed projects may be located within six miles of the Project,[3] totaling 31,752 acres of land devoted to solar projects in a six-mile radius.[4] The proposed Project will unavoidably tax the State of California's limited air, water, land, biological and cultural resources and transmission capacity to a potentially significant cumulative extent. The final toll taken by this historic energy boom on California's environment, public health and natural resource base may not be known for several years or longer, but currently available and substantial evidence shows that the effects will be severe. Based on these concerns, Local 477 and its members have a strong interest in ensuring that this Project complies with all applicable federal, State and local laws and regulations.

Comment

As these comments will demonstrate, the DEIS is fatally deficient and must be substantially revised and recirculated for further public review and comment before it may be finalized.[5] We have prepared these comments with the assistance of Dr. Oliver Seely (water use), Jim Cornett, M.S. (biological resources impacts),

Comment

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[2] Press Release, Office of the Governor, Governor Schwarzenegger Announces 244 Proposed Renewable Energy Projects Throughout the State (Dec. 29, 2009), *available at* http://gov.ca.gov/press-release/14092/.

[3] BUREAU OF LAND MANAGEMENT, DRAFT ENVIRONMENTAL IMPACT STATEMENT AND CALIFORNIA DESERT CONSERVATION AREA PLAN AMENDMENT FOR THE PROPOSED CHEVRON ENERGY SOLUTIONS LUCERNE VALLEY SOLAR PROJECT 3.18-9 (vol. 1 Jan. 2010) [hereinafter DEIS].

[4] DEIS, p. 4.12-12 (calculating 31,236 acres (three solar projects) + 516 acres (Applicant's Project)).

[5] 40 C.F.R. § 1502.9(a) (2009) ("If a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion.").

Comment 024 ctd.

T'Shaka Toure, M.S. (hydrology impacts) and Matt Hagemann, P.G. (hazardous soils). Their comments and qualifications are appended hereto as Attachment A ("Seely Comments"), Attachment B ("Cornett Comments"), Attachment C ("Toure Comments") and Attachment D ("Hagemann Comments"). Please note that their comments supplement the issues addressed below and should be addressed and ***responded to separately***.

I. NEPA'S PURPOSE AND GOALS

Comment 025

NEPA has two basic requirements, neither of which the DEIS satisfies. First, NEPA requires that agencies take a "hard look" at the environmental consequences of a proposed action.[6] A hard look is defined as a "reasoned analysis containing quantitative or detailed qualitative information."[7] The level of detail must be sufficient to support reasoned conclusions by comparing the amount and the degree of the impact caused by the proposed action and the alternatives.[8] Second, NEPA review makes information on the environmental consequences of a proposed action available to the public, which may then offer its insight to assist the agency's decision-making.[9]

Comment 026

An EIS is an "action-forcing device" which ensures that NEPA's requirements are infused into the ongoing programs and actions of the federal government.[10] It is more than just a disclosure device, but a device used by federal agencies to plan actions and make decisions.[11] An EIS must provide a full and fair discussion of every significant impact, as well as inform decision-makers and the public of reasonable alternatives which would avoid or minimize adverse impacts.[12] It should be "concise, clear, to the point, and supported by evidence that the agency has made the necessary environmental analyses."[13] A concise and clear EIS that is supported by evidence ensures that federal agencies are informed of environmental consequences ***before*** making decisions and that the information is available to the public.[14] As the Council on Environmental Quality ("CEQ") explains in its regulations, "[e]nvironmental impact statements shall serve as the means of assessing the environmental impact of proposed agency actions, rather than justifying decisions already made."[15]

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[6] Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 350 (1989); Dubois v. U.S. Dep't of Agric., 102 F.3d 1273, 1284 (1st. Cir. 1996).

[7] BUREAU OF LAND MANAGEMENT, NEPA HANDBOOK 55 (Jan. 2008) [hereinafter NEPA Handbook].

[8] NEPA Handbook p. 55; *see also* 40 C.F.R. § 1502.1 (2009).

[9] *See Robertson*, 490 U.S. at 350; *Dubois*, 102 F.3d at 1284.

[10] 40 C.F.R. § 1502.1.

[11] *Id.*

[12] *Id.*

[13] *Id.*

The DEIS for the proposed Project fails to comply with these basic requirements. First, the lack of complete, accurate and consistent information in the DEIS precludes an informed comparison of the alternatives and an analysis of the Proposed Action. Second, the BLM failed to take a hard look at all of the Project's impacts. Third, the BLM impermissibly limited its alternatives analysis by relying on an arbitrarily narrow purpose and need statement. Finally, the BLM violated NEPA's integration requirement by not conducting joint review under both NEPA and CEQA. For these reasons, the DEIS precludes a meaningful analysis of the Project, and the BLM must prepare and recirculate a joint DEIS/EIR before making a decision.[16]

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II. INFORMATION IN THE DEIS IS INCOMPLETE, INCONSISTENT AND INACCURATE

A complete and consistent description is necessary for the public and decision makers to understand the effects of the proposed action and its alternatives.[17] A clear description results in more focused and meaningful public input and BLM participation, a more complete identification of issues, development of reasonable alternatives, sound analysis and interpretation of effects, focused analysis and a sound and supportable decision.[18] It follows that information in the DEIS that is incomplete, inconsistent and/or inaccurate will skew the environmental consequences analysis and prevent informed public input. Courts have held that "[w]here the information in the initial EIS was so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of the alternatives, revision of an EIS [was] necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA."[19]

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[14] Inland Empire Pub. Lands Council v. U.S. Forest Serv., 88 F.3d 754, 758 (9th Cir. 1996).

[15] 40 C.F.R. § 1502.2(g).

[16] *Id.*

[17] *See* 40 C.F.R. § 1502.15; *see also* Laguna Greenbelt v. U.S. Dep't of Transp., 42 F.3d 517, 528-29 (9th Cir. 1994) (reviewing plaintiff's claim that inconsistent definition resulted in misleading analysis of project's positive and negative effects).

[18] NEPA Handbook p. 43.

The DEIS contains incomplete, inconsistent and inaccurate information that precludes a meaningful comparison of the alternatives and understanding of the Proposed Action. This violates the basic requirements of NEPA. The BLM must revise the DEIS to provide a reasonable, good faith and objective presentation of the affected environment and environmental consequences of the Proposed Action and its alternatives.

Comment 032

A. The DEIS fails to disclose BLM's consultation and potential permit under the Endangered Species Act

The DEIS completely fails to disclose BLM's required consultation under the Endangered Species Act ("ESA") with the United States Fish & Wildlife Service ("USFWS") for the federally and State threatened desert tortoise. The DEIS also completely fails to analyze the USFWS's potential issuance of a biological opinion and incidental take permit under Section 7 of the ESA. Therefore, the DEIS is wholly inadequate. The BLM must disclose and analyze these activities in a revised DEIS that is circulated to the public for review and comment.

Comment 033

Comment 034

The ESA prohibits "take" of threatened and endangered species.[20] "Take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct."[21] "Harm" includes "the destruction or adverse modification of habitat resulting in potential injury to a species, including injury from impairment of essential behavioral patterns, such as breeding, feeding or sheltering."[22] Under ESA Section 7, a federal agency must initiate consultation with the USFWS "at the earliest possible time" whenever the agency proposes to undertake an action that "may affect" a listed species or species' critical habitat.[23] If a "may affect" determination is made, which is certain for the proposed Project, then the USFWS must develop and issue a biological opinion containing terms and conditions to ensure that the activities are not likely to jeopardize protected species.[24] Furthermore, USFWS's issuance of a biological opinion requires environmental review under NEPA.

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[19] Natural Res. Def. Council v. U.S. Forest Serv., 421 F.3d 797, 811 (9th Cir. 2005) (citing Animal Def. Council v. Hodel, 840 F.2d 1432, 1439 (9th Cir. 1988)).

[20] 16 U.S.C. § 1538 (2010).

[21] 16 U.S.C. § 1532(19).

[22] 50 C.F.R. § 17.3 (2009).

[23] 50 C.F.R. § 402.14(a).

Comment (

Here, despite protected species on the proposed Project site, there is no indication in the DEIS or its appendices that the BLM has initiated consultation under Section 7 of the ESA, or that the DEIS reviews the environmental effects of the USFWS's issuance of a biological opinion and incidental take permit. A total of seven desert tortoises were detected during surveys conducted in March and April on the Project site.[25] Incidental desert tortoise observations were also made during plant surveys conducted in May, and thirty-eight desert tortoise burrows were identified within the site and buffer zone.[26] The DEIS recognizes that the Project will cause both short- and long-term, as well as direct and indirect impacts, to federally protected tortoises.[27]

Direct and indirect impacts to desert tortoises will be severe. For example, the tortoises could be susceptible to mortality from collisions with vehicles entering and leaving the site.[28] Clearing of the site and construction of the security fence could introduce feral dogs and the presence of raptors.[29] Vibrations of heavy equipment could cause burrows to collapse, burying the tortoises alive and destroying their habitat.[30] Tortoises forced to construct new burrows would be exposed to death by dehydration or upper respiratory tract disease.[31] In addition, the spread of invasive plant species on the site, especially Sahara mustard, would cause an indirect loss to foraging habitat.[32]

Comment C

Because desert tortoises have been found on the site, and the Project will clearly impact the species, the BLM must undertake Section 7 consultation.

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[24] *See* 16 U.S.C. § 1536.

[25] DEIS p. 3.6-21; CHAMBERS GROUP, INC., COMPREHENSIVE BIOLOGICAL RESOURCES ASSESSMENT FOR THE CHEVRON SOLAR PROJECT SITE 41 (July 2009) (quoting DEP'T OF FISH & GAME, A FIELD GUIDE TO LAKE AND STREAMBED ALTERATION AGREEMENTS SECTIONS 1600-1607 (1994)) [hereinafter Comprehensive Biological Assessment].

[26] DEIS p. 3.6-21.

[27] *Id* at pp. ES-10, 4.6-13.

[28] *Id.* at p. 4.6-13.

[29] *Id.*

[30] *Id.*

[31] *Id.*

[32] *Id.*

Comment 037
Comment 038
Comment 039

The DEIS states that the *Applicant* has completed consultation with the USFWS and the California Department of Fish & Game ("CDFG") and that all terms and conditions associated with these consultations would be implemented.[33] However, the DEIS and its appendices provide no evidence to support this statement, and no evidence that the *BLM* has consulted with the USFWS. In addition, the DEIS fails to disclose any of the terms and conditions the USFWS and CDFG require the Applicant to implement. Because the terms and conditions seem to include moving tortoises from the site, the DEIS must include a Translocation Plan with specific information including, but not limited to, the location of the translocation area, how the tortoises will be moved, when they will be moved and who will monitor their relocation.

Comment 040

In sum, the DEIS must disclose the status of BLM consultation with the USFWS, the terms and conditions imposed by the USFWS and the Translocation Plan. Without this information, it is impossible for the public to meaningfully assess the environmental effects and mitigation for impacts to the desert tortoise. Furthermore, without full public disclosure and opportunity for comment, USFWS will be required to conduct further environmental review under NEPA.

B. The BLM must accurately describe the amount of water the Proposed Action and alternatives will need during operation

Comment 041

The BLM must accurately describe the amount of water the Proposed Action and action alternatives will need. The DEIS does not contain any evidence, discussion, or information to support the determination that the Proposed Action would only require, at most, 45,000 gallons of water per year during operation.[34] The BLM must revise the DEIS to support its findings for both construction and operational water use, or acknowledge that the Project will likely require much more than 45,000 gallons of water per year during operation.

Comment 042

Photovoltaic ("PV") solar panels require periodic rinsing to maintain their efficiency.[35] The amount of water needed for cleaning depends on a variety of factors such as dust fall, dust compaction, water waste, etc. Because the Project's solar panels will likely need cleaning at least twice per year, Dr. Oliver Seely estimated that the Proposed Action would require approximately 270,000 gallons per year for maintenance.[36] Dr. Seely's estimated water use is ***six times*** more than what the BLM determined the Project would require in the DEIS.[37]

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[33] *Id.*

[34] *Id.* at pp. ES-8, 2-23, 4.5-4.

[35] Oliver Seely, *Some Observations on Photovoltaic Cell Panels*, http://www.csudh.edu/oliver/smt310-handouts/solarpan/solarpan.htm (Attachment E).

Comment 042 ctd.

Dr. Seely's estimate is further supported by the estimated water use for other PV solar projects in the region. For example, the Mitigated Negative Declaration for the Boulevard Associates Kramer Junction Project states that the 20-MW PV solar facility "shall consume a 'minimal amount' of water for the occasional cleaning of panels as they become dusty throughout the year."[38] This "minimal amount" is approximately 150,000 gallons of water per year.

Comment

Stephanie Tavares, an environmental reporter for the *Las Vegas Sun*, compared the proposed operational water use for various PV solar projects.[39] She determined that 16,689 gallons of water per MW was required yearly to clean PV solar plants. Based on this assumption, the proposed Project would need approximately 751,005 gallons of water per year for maintenance.[40]

Comment

As Dr. Seely's analysis in Attachment A and additional factual data indicate, the BLM likely underestimated the Project's proposed operational water use. Because the BLM underestimated the operational water use, the BLM may have also underestimated the Project's construction water use. The BLM must either support its initial determinations with factual evidence, or recalculate the Proposed Action's water use, as well as the water use necessary for each of the alternatives. Only then will the BLM's analysis of the environmental impacts become meaningful.

Comment

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[36] Seely Comments p. 1.

[37] *Id.*

[38] SAN BERNARDINO COUNTY, KRAMER JUNCTION SOLAR ENERGY CENTER BOULEVARD ASSOCIATES, LLC 6 (March 2010), *available at* http://www1.sbcounty.gov/landuseservices/Public%20Notices/Projects/Boulevard%20Associates/Initial%20Study_final%2003042010.pdf (see excerpts in Attachment F).

[39] Stephanie Tavares, *Dirty detail: Solar Panels Need Water*, LAS VEGAS SUN, Sept. 18, 2009 (Attachment G).

[40] 16,689 x 45 = 751,005.

C. The DEIS's description of the Project's water source is incomplete

Comment 046

The specific ***source of construction and maintenance water for the Project is not disclosed*** in the DEIS. The DEIS states that water may be provided through a contract with one of the local large industrial or municipal water companies,[41] from new or existing onsite wells,[42] or the Mojave Water Agency.[43] The Project's environmental consequences will vary depending on the water source. Thus, the BLM must provide a complete and consistent description of the Project's water source so that the public may meaningfully assess the Project's impacts.

Comment 047

Comment 048

At this point, the BLM has completely failed to inform the public about the source of water and the environmental and public health effects from using such water for the Project. Water from an offsite source may require new infrastructure, modifications to existing infrastructure and/or additional federal, State and local approvals. The closest water company to the Project site is the Jubilee Mutual Water Company located approximately five miles away.[44] The Golden State Water Company also provides water to the Lucerne Valley area and is located approximately 20 miles away.[45] If the Jubilee Mutual Water Company and the Golden State Water Company do not have sufficient capacity to serve the Project, water may be provided from another water company in the desert area. Using water from any of these sources raises a myriad of potentially significant effects and legal issues that have not yet been addressed, including impacts on groundwater from increased extraction, impacts on State water from California's State Water Project, impacts on biological resources, land use, and air quality from construction of pipelines, availability and reliability of water supplies, legal entitlements, need for further right-of-ways, effects from trucking water to the site and others.

Comment 049

If the Project will receive water from new or existing onsite wells, the location of the wells, how the water will be pumped from the wells, when the water will be

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[41] DEIS pp. 2-23, 4.5-4.
[42] *Id.* at p. 3.5-6.
[43] *See id.* at p. 3.5-3.
[44] *See* SAN BERNARDINO COUNTY, GENERAL PLAN, FIGURE 2-14C WATER PURVEYORS – DESERT REGION (Attachment H).
[45] Cornett comments p. 5.

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

pumped from the wells, the effects of pumping water from the wells and the required federal, State and local approvals must be disclosed to the public.

The *Mojave Water Agency Watermaster Annual Report for Water Year 2008-09* identifies declining water levels in many of the Mojave Basin Area's subareas.[46] For example, the water levels in the Baja Subarea to the north and the Alto Subarea to the east are both experiencing declining water levels due to over pumping and limited recharge opportunities.[47]

The DEIS recognizes that overdraft conditions already frequently occur because of overuse of the groundwater aquifer.[48] Well levels around the Project site fluctuate.[49] **Existing water providers** within Lucerne Valley **currently rely on groundwater** from groundwater wells.[50] **In addition, the groundwater basin provides two-thirds of the potable and non-potable water needs for users in the region.**[51] Thus, the Project's need for large amounts of construction and operational water would likely exacerbate overdraft conditions and cause an overall decline in water levels in the region.

Clearly, the BLM has not even begun to describe the Project's proposed water supply and the Project's affects on water resources. The BLM must provide a complete and consistent description of the Project's water source with an assessment of the Project's impacts on that source and disclose it to the public.

D. The DEIS's description of the Project's impacts to drainage systems is incomplete and inconsistent

The description of the Project's impacts to drainage systems is incompletely and inconsistently described in the DEIS. The DEIS states that the Project would utilize and maintain natural onsite drainages to minimize potential risk associated with likely geologic hazards.[52] The DEIS also states, however, that "[t]he Proposed Action could modify on-site drainages."[53] The Comprehensive Biological Resources Assessment recognizes that "[d]rainage systems in the Project site will be temporarily and permanently impacted by the proposed solar project."[54] The BLM must revise these inconsistencies and provide a complete description of the Proposed Action's impacts to natural drainage systems.

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[46] Memorandum from Valerie L. Wiegenstein, Watermaster Services Manager, Mojave Basin Area Water Master to Clerk of the Superior Court of Riverside County re Watermaster Annual Report for Water Year 2008-09 24-25 (May 2010) (see excerpts in Attachment I) .

[47] *Id.*

[48] DEIS p. 3.5-5.

[49] U.S. GEOLOGICAL SURVEY, NATIONAL WATER INFORMATION SYSTEM, GROUNDWATER LEVELS IN TOWNSHIP 04N, RANGE 02E (Attachment J).

[50] DEIS p. 3.15-10.

[51] *Id.* at p. 3.5-5.

Comment 052 ctd.

Specifically, if drainage systems will be modified, the DEIS must disclose what modification will occur, which drainages will be impacted and to what extent the drainages will be modified.[55] This is fundamental information that is required to provide the public an opportunity to meaningfully compare the Proposed Action with the alternatives. For example, to compare alternatives, the public must know whether the Proposed Action would modify the same drainages as Alternative 4. In addition, there may be an alternate site design that will impact drainages less.[56]

Comment 053

Comment 054

The DEIS must also describe what fill material the Applicant will use to modify the drainages.[57] If cement is used for bank stabilization and protection for transition and curve segments, the Project will significantly impact the ability of wildlife to utilize the surrounding area.[58] If the Applicant will use natural substrate (i.e. compacted earthern material along with rip rap), however, impacts to biological resources may be reduced.[59]

Comment 055

The BLM's failure to provide even basic information on impacts to drainages precludes meaningful public input on the Proposed Action's affect on drainages and on alternatives to the Proposed Action. The BLM must provide this information so that it can take a hard look at impacts to the drainages and provide mitigation where feasible. Feasible mitigation measures include compensation to restore and enhance bioswales and downstream drainages.[60]

Comment 056

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[52] *Id.* at pp. ES-6, ES-7.
[53] *Id.* at p. 1-12.
[54] Comprehensive Biological Assessment p. 59.
[55] Toure comments p. 2.
[56] *See id.* at p. 5.
[57] *Id.* at p. 2.
[58] *Id.*
[59] *Id.*
[60] *Id.* at p. 3.

E. The BLM must describe storm drainage

Comment 0

The BLM failed to describe whether storm water will be drained from the site through newly constructed drainages or through natural onsite drainages. This information is necessary for a complete analysis. For example, if the Applicant will construct designated storm drains, additional grading will be necessary.[61] In addition, if natural onsite drainages are used, the DEIS should discuss their carrying capacity and the possibility of overflow.[62] The BLM must provide this information so that all of the Project's impacts can be assessed.

F. The BLM must prepare a Hydrology Report and finalize the Storm Water Pollution Prevention Plan

Comment 0

The BLM must provide the public with a complete and final Hydrology Report and Storm Water Pollution Prevention Plan ("SWPPP") before approving the Project. Information normally contained in these reports helps the public understand and assess the water table, the natural flow pattern onsite and offsite and the Applicant's measures to address flooding.[63] Without the basic information contained in these reports, the public cannot meaningfully assess the Project's impacts.

G. The DEIS's description of the Project's Restoration Plan is incomplete

Comment 05

The BLM must provide a complete and consistent description of the Project's Restoration Plan before it issues a decision. The Biological Assessment references "an approved" Restoration Plan.[64] However, the DEIS and its appendices contains no Restoration Plan to enable the public to meaningfully review the Project's effects.

Comment 0

The BLM must disclose the Applicant's Restoration Plan so that decision makers and the public will understand all of the Proposed Action's impacts. For example, if restoration of the site requires revegetation, the Project may impact

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[61] *Id.*

[62] *Id.*

[63] *Id.*

[64] CHAMBERS GROUP, INC., DRAFT BIOLOGICAL ASSESSMENT FOR THE CHEVRON SOLAR PROJECT SITE 22, 24 (Sept. 2009) .

Comment 060 ctd.

native vegetative communities.[65] Project sites in California are often revegetated with creosote bushes from Texas.[66] Creosote bushes from Texas, however, are biologically different from California creosote bushes, and may overtake the native species.[67] Information about what plants will be used for revegetation, how drainages will be restored, whether wildlife will be reintroduced and what other restoration activities will be implemented, is necessary for a meaningful impacts analysis.

H. The DEIS inconsistently describes the Project site as both occupied and vacant

Comment 061

The DEIS inconsistently describes the Project area as both occupied and vacant and fails to clearly identify the location of structures. The DEIS states that "[t]here are several *occupied* buildings of unknown origin that are likely not permitted and graded dirt access roads, indicating there are residents living on the property illegally."[68] The DEIS also states, however, that "[t]he site is undeveloped and *vacant* and has never been officially used for any commercial, agricultural, or industrial purposes."[69] The BLM must revise this inconsistency to allow for a meaningful comparison of the alternatives and assessment of the Proposed Action.

If there are occupied buildings on the Project site, the BLM must disclose where the buildings are, what hazardous materials the buildings contain and whether the occupants of the buildings will leave the Project site before construction. Only with this information can the public and decision makers conduct a meaningful comparison of the alternatives and the Proposed Action's environmental impacts.

Comment 062

For example, if there are existing structures south of Zircon Road, development of Alternative 5 would not require the destruction and removal of these structures. However, if the buildings are located north of Zircon Road, destruction of the buildings would be necessary under every action alternative, and workers may be exposed to asbestos, lead paint and other hazardous materials. In addition, if residents of the buildings will remain on the Project site during construction and/or operation, the DEIS should assess visual and noise impacts to onsite sensitive receptors. Depending on the location of the occupied buildings, Alternative 4 may reduce visual impacts to these onsite sensitive receptors.

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[65] Cornett comments p. 5.

[66] *Id.*

[67] *Id.*

[68] DEIS p. 3.14-4 (emphasis added).

[69] *Id.* at p. 4.14-3 (emphasis added).

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062 ct

The BLM must provide a consistent description of the Project site, so that a meaningful comparison of the alternatives and an assessment of the Proposed Action's environmental consequences are possible. The DEIS's description of the site as both occupied and vacant precludes a meaningful analysis. In addition, the DEIS's failure to describe the location of buildings precludes a meaningful analysis. The BLM must revise the DEIS to provide a consistent description that adequately compares the alternatives and evaluates the environmental impacts.

Commen

I. The DEIS's description of the Project site as mining land and an area with little or no mining activity is inconsistent

The description of the Project area is inconsistently described as both mining land and an area with little or no mining activity. The DEIS states that "[t]he Proposed Action would be located approximately eight miles east of the junction of Barstow Road and Old Woman Springs Road on partially disturbed *mining land*."[70] The DEIS also states, however, that "[t]he Proposed Action is located in an area with *little or no mining activity*, and no minerals are found on the site."[71] The BLM must revise this inconsistency to avoid misleading statements and allow for a meaningful comparison of the alternatives and assessment of the Proposed Action.

Comment

The inconsistent description of the area as mining land with little or no mining activity is misleading to the public and affects the BLM's analysis of environmental consequences. The DEIS recognizes that Lucerne Valley has a rich mining history and that it is possible that mining claims occur within the Project area.[72] The BLM's description of the site as having "little or no mining activity" is clearly inconsistent and misleading.

Comment

Furthermore, the BLM relies on this misleading statement to support its own conclusion that the Project would not restrict access to mineral resources and result in an irreversible and irretrievable commitment of mineral resources.[73] The

Comment 0

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[70] *Id.* at p. 4.10-1 (emphasis added).
[71] *Id.* at p. 4.18-5 (emphasis added).
[72] *Id.* at p. 3.7-7.
[73] *Id.* at pp. 4.17-2, 4.17-3, 4.18-5.

misleading statement, therefore, precludes informed decision-making. The description of mineral resources on the site needs to be adequately determined and consistently described so that all of the impacts will be disclosed to the public and decision makers.

Comment 066 ctd.

J. The DEIS's description of impacts to Joshua trees is inaccurate

The DEIS mischaracterizes the Project's significant impacts to Joshua trees. The DEIS states that no long-term direct impacts to Joshua trees are anticipated because these plants would be flagged for salvage and removed.[74] However, the DEIS provides no support for this statement.

Comment 067

Jim Cornett found that Joshua trees experience high rates of mortality during salvaging.[75] Mortality typically exceeds 50% and sometimes reaches 100%.[76] As set forth in Attachment B, the BLM must reassess the long-term significant impacts to Joshua trees.

Comment 068

K. The DEIS's description of impacts resulting from cutting and grubbing site vegetation is incomplete and inaccurate

The DEIS incompletely describes and mischaracterizes impacts resulting from mowing and grubbing activities. The DEIS states that long-term effects to vegetation from mowing would depend on the scale, intensity and duration of the activity.[77] It is unclear from the DEIS what "activity" will affect vegetation long-term, and why the BLM could not conclude that the impact would be significant.

Comment 069

The DEIS must contain a complete description of what activity will affect vegetation in the long-term. If the effects depend on the scale and intensity of mowing activities, impacts should be easy to assess. According to the DEIS, mowing will occur on 420 acres and will reduce vegetation to between six and twelve inches in height.[78] Because the scale and intensity of mowing activities is clearly defined, a biologist should be able to determine the long-term impacts to vegetation easily.

Comment 070

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[74] *Id.* at pp. ES-8, 4.6-2, 4.6-3, 4.6-6.

[75] Cornett comments p. 3.

[76] *Id.*

[77] DEIS p. ES-8.

[78] *Id.*

Mr. Cornett found that long-term impacts will be significant. Desert perennials concentrate leaves, buds, blossoms, fruits and seeds in their outer branches.[79] Mowing and grubbing activities destroy those portions of the plants.[80] Grubbing also has a greater impact than grading because there is a potential for deeper penetration of the soil by the teeth of the plow.[81] The BLM must accurately describe the significant long-term effects to vegetation from mowing and grubbing.

Commen

In sum, information in the DEIS is incomplete, inconsistent and inaccurate. Courts have held that "[w]here the information in the initial EIS was so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of the alternatives, revision of an EIS [was] necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA."[82] The BLM must revise the DEIS to provide a reasonable, good faith and objective presentation of the affected environment and environmental consequences of the Proposed Action and its alternatives.

Comment

III. THE DEIS DOES NOT CONTAIN A HARD LOOK AT THE PROJECT'S IMPACTS

In an EIS, the agency must consider every significant aspect of a proposed action.[83] An EIS's discussion of environmental impacts forms the scientific and analytic basis for comparison of the alternatives.[84] The discussion of impacts must include both "direct and indirect effects (secondary impacts) of a proposed project."[85] The impacts analysis must include a discussion of the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented.[86] An agency need not speculate about all conceivable impacts, but it must evaluate the

Comment

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[79] Cornett comments p. 4.

[80] *Id.*

[81] *Id.*

[82] Natural Res. Def. Council v. U.S. Forest Serv., 421 F.3d 797, 811 (9th Cir. 2005) (citing Animal Def. Council v. Hodel, 840 F.2d 1432, 1439 (9th Cir. 1988)).

[83] Balt. Gas & Elec. Co. v. Natural Res. Def. Council, 462 U.S. 87, 97 (1983); Dubois v. U.S. Dep't of Agric., 102 F.3d 1273, 1286 (1st Cir. 1996).

[84] 40 C.F.R. § 1502.16; *Dubois*, 102 F.3d at 1286.

[85] 40 C.F.R. 1502.16 (a), (b); Sierra Club v. Marsh, 976 F.2d 763, 767 (1st Cir. 1992); *Dubois*, 102 F.3d at 1286.

[86] 40 C.F.R. § 1502.16.

reasonably foreseeable significant effects of the proposed action.[87] Reasonable foreseeability means that "the impact is sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision."[88]

Comment 073 ctd.

The DEIS does not consider all of the Project's significant and foreseeable environmental impacts to biological resources, water resources, transmission and communication systems, mineral resources, noise, hazards and cultural resources. The BLM's failure to take a hard look at the Project's impacts violates the basic requirements of NEPA. The BLM must revise its impacts analysis and issue a supplemental EIS for public review and comment.

Comment 074

A. The BLM did not consider all of the Project's impacts to biological resources

Jim Cornett, a certified wildlife biologist, reviewed the DEIS's analysis of impacts on biological resources and special status species. Mr. Cornett determined that the BLM failed to take a hard look at all of the Project's impacts. Therefore, the BLM must revise its analysis of the Project's impacts to biological resources.

Comment 075

1. The BLM must evaluate the Project's cumulative impacts to the Desert Tortoise

The DEIS recognizes that desert tortoises are present on the Project site and that construction and operation activities may impact the species.[89] Desert tortoises are listed as a threatened species under both the ESA and the California Endangered Species Act ("CESA"). Despite the protected status of desert tortoises, the BLM failed to take a hard look at the cumulative impacts caused by the Proposed Action and the action alternatives. The BLM must adequately evaluate the Project's cumulative effects on the desert tortoise.

Comment 076

The DEIS concludes that there would be no cumulative effect, such as extirpation or change in status to desert tortoises, because they could move within the open spaces surrounding the various projects in the region.[90] According to Mr.

Comment 077

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[87] *Sierra Club*, 976 F.2d at 768.

[88] *Dubois*, 102 F.3d at 1286 (citing *Sierra Club*, 976 F.2d at 767).

[89] *See* DEIS pp. 3.6-21, 4.6-13 – 4.6-14.

[90] *Id.* at p. 4.6-16.

Cornett, however, desert tortoises have site-restricted populations.[91] The inability for desert tortoises to utilize the site where they typically feed, find shelter, or breed may cause stress and territorial battles and is most likely to result in death.[92]

comment 077 ctd.

Three solar project ROWs are proposed or available within six miles of the Project,[93] totaling 31,752 acres of land devoted to solar projects in a six-mile radius.[94] The BLM must analyze what impact the loss of 31,752 acres of land within a six-mile radius will have on the long-term success of the species. The BLM must also rigorously compare the Proposed Action's cumulative effects with the reduced cumulative effects of Alternative 5 and the use of alternate sites.

Comment 07

2. The BLM must evaluate the Project's impacts to the California threatened Mojave ground squirrel

The DEIS fails to recognize the Project's significant impacts to the Mohave ground squirrel. Mohave ground squirrels are a State listed threatened species and may occur on the Project site and in the immediate Project vicinity. Construction and operation activities could significantly impact Mohave ground squirrels. The BLM must determine whether the Project may impact Mohave ground squirrels in order to mitigate impacts and comply with the CESA fully.

Comment

The CESA declares that it is the policy of this State to conserve and protect any threatened or endangered species and its habitat.[95] The CESA prohibits unauthorized "take" of protected species.[96] "Take" means "hunt, pursue, catch, capture, or kill a protected species."[97] "Take" is only permitted if the take is incidental to otherwise lawful activities and the "impacts" are minimized and "fully mitigated."[98] An incidental take permit is a discretionary project that requires environmental review under CEQA.[99]

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[91] Cornett Comments p. 3.

[92] *Id.*

[93] DEIS p. 3.18-9.

[94] *Id.* at p. 4.12-12.

[95] CAL. FISH & GAME CODE § 2052 (2010).

[96] CAL. FISH & GAME CODE § 2080.

[97] CAL. FISH AND GAME CODE § 86.

[98] CAL. FISH AND GAME CODE § 2081(b).

[99] CAL. PUB. RES. CODE § 21080(a) (2010); *see also* Evntl. Prot. Info. Ctr. v. Cal. Dept. of Forestry & Fire Prot., 44 Cal.4th 459, 521 (Cal. 2008).

The Project may impact Mohave ground squirrels and trigger the "incidental take" provisions of the CESA. CDFG guidelines specify that surveys for Mohave ground squirrels be conducted on proposed project sites that support desert scrub vegetation and are within or adjacent to the Mohave ground squirrel geographic range.[100] The protocol mandates an initial visual survey of a project site.[101] If no Mohave ground squirrels are detected visually, live-trapping is required for up to three sessions of five consecutive days each.[102] If a Mohave ground squirrel is detected on the site, a project proponent must apply to CDFG for an incidental take permit and provide compensation, usually in the form of mitigation lands.[103]

Comment 080

The Project site is within the Mohave ground squirrel's range,[104] and the species has been observed within four miles of the Project site.[105] The Applicant conducted only one visual survey in May 2009, but failed to conduct any trapping studies on the Project site.[106] The Applicant did report that a Round-tailed ground squirrel was observed. However, Round-tailed ground squirrels are ***impossible*** to distinguish from Mohave ground squirrels during visual field surveys.[107] Thus, the biologist conducting the visual survey may have actually observed a Mohave ground squirrel.

Comment 081

Comment 082

Nevertheless, according to CDFG guidelines, because no Mohave ground squirrels were definitively identified during the visual survey, the Applicant should have conducted a trapping study. However, the Applicant failed to do so.[108] The failure to conduct trapping studies is inconsistent with CDFG guidelines.

Comment 083

Because the site provides suitable habitat for State protected Mohave ground squirrels, this species may be present on the site and significantly impacted by construction and operation activities. These activities could result in an unauthorized take under the CESA. The BLM must require the Applicant to

Comment 084

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[100] Philip Lietner, *Current Status of the Mohave Ground Squirrel* 13 (2009), *available at* nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=15148 (Attachment J).

[101] *Id.*

[102] *Id.*

[103] *Id.*

[104] *See id.* at 12.

[105] CHEVRON, LUCERNE VALLEY SOLAR PROJECTS, PLAN OF DEVELOPMENT, BLM FILE CACA 49561 49 (Attachment K).

[106] DEIS pp. 3.6-18, 3.6-21; Comprehensive Biological Assessment p. 37.

[107] Cornett comments p. 6.

[108] DEIS p. 3.6-21.

conduct trapping surveys on the Project site so that it may adequately assess the Project's impacts and ensure compliance with the CESA.

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In addition, the USFWS is considering listing the Mohave ground squirrel as an endangered species under the ESA. On April 27, 2010, the USFWS issued a 90-day finding on a petition to list the Mohave ground squirrel as endangered with critical habitat.[109] If the species is listed as endangered, BLM would need to consult with USFWS and request a biological opinion and incidental take permit before conducting any activity that may harm the species. Therefore, the BLM should consult with the USFWS regarding the Project's likely take of the species in order to ensure compliance with the federal ESA.

Comment

3. The BLM must evaluate the Project's impacts to the Western burrowing owl

The Western burrowing owl is protected by the Migratory Bird Treaty Act, considered a Bird of Conservation Concern by the USFWS and a Species of Concern in California.[110] The burrowing owl's special status both federally and within the State mandates that the BLM take a hard look at any potential impacts the Project may have on the species. Because of BLM's failure to assume the presence of the burrowing owl on the site and the failure of the biologists to conduct a sufficient survey, the DEIS does not contain an adequate assessment of impacts to the Western burrowing owl. The BLM must revise the DEIS to contain a hard look at the Project's impacts to the species.

Comment (

The DEIS acknowledges that suitable habitat exists on the site and that the species was observed in the area in the past.[111] During the burrowing owl survey, excrement and regurgitated pellets were observed on and near the site that were estimated to be about two to three years old.[112] However, no Western burrowing owls were actually observed during the surveys. Therefore, the DEIS does not contain any specific mitigation measures to ensure the protection of this species.

Comment

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[109] Endangered and Threatened Wildlife and Plants: 90-day Finding on a Petition to List the Mohave Ground Squirrel as Endangered with Critical Habitat, 75 Fed. Reg. 22,063 (April 27, 2010), *available at* http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2010_register&docid=fr27ap10-22.

[110] U.S. FISH & WILDLIFE SERV., STATUS ASSESSMENT & CONSERVATION PLAN FOR THE WESTERN BURROWING OWL IN THE UNITED STATES pp. 4-5 (2003).

[111] DEIS pp. ES-10, 4.6-12.

[112] *Id.* at p. 3.6-21.

Although no burrowing owls were observed during the surveys, the species may still be present on the site. According to the CDFG, a site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow within the last three years.[113] The DEIS does not state when the species was observed on the Project site in the past. However, excrement and regurgitated pellets are evidence that the species may have occupied the site within the last three years. Thus, the BLM should assume that the site is occupied by the Western burrowing owl. Comment 088

The biologists may have also missed observing a burrowing owl because the surveys were deficient. According to Mr. Cornett, owl surveys are frequently conducted with binoculars and involve looking upward to identify flushed owls and listening for owl calls.[114] The burrowing owl surveys conducted for the Project, however, seem to have been conducted in conjunction with desert tortoise surveys.[115] If the surveys were in fact conducted at the same time, it is likely that biologists may have missed observing the burrowing owl because they were looking down. Tortoise surveys do not require the biologist to look upward towards flushing owls, listen for calls or use binoculars.[116] Comment 089

It is important that the BLM specifically determine whether the Western burrowing owl is present on the site in order to mitigate potentially significant impacts. The BLM must assume that the Western burrowing owl is present on the site, or require the Applicant to redo the survey using proper methods. Comment 090

4. The BLM must evaluate the Project's impacts to the Golden eagle

The Golden eagle is protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Act. The DEIS recognizes that Golden eagles are common in the Mojave Desert. However, because no Golden eagles were identified during the avian point-count survey, the DEIS does not contain an impact analysis or mitigation measures.[117] Comment 091

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[113] DEP'T OF FISH & GAME, STAFF REPORT ON BURROWING OWL MITIGATION 2 (Oct. 17, 1995) (Attachment L).
[114] Cornett comments p. 6.
[115] DEIS p. 3.6-21.
[116] Cornett comments p. 6.
[117] Comprehensive Biological Assessment p. 16.

The USFWS is currently developing protocol for Golden eagle surveys. Because nesting sites are within ten miles of the Project site and typical prey species occur on the Project site, Mr. Cornett expects that the Project site lies within the hunting territory of the Golden eagle.[118] The BLM should consult with the USFWS and conduct a focused survey for this species.

Comment

5. The BLM must evaluate the Project's impacts to rare plants

The DEIS does not provide a full and fair discussion of impacts to rare plants because none of the twelve special-status plants were found during the deficient onsite survey.[119] According to Mr. Cornett, the surveys were conducted only two days apart in a year when precipitation was far below average.[120] The BLM must require the Applicant to conduct an adequate plant survey so that impacts to rare plants are identified and mitigated.

Comment

6. The BLM must evaluate the Project's impacts to mesquite plants

The DEIS does not include ***any*** discussion about the Project's impacts to mesquite plants. Using large amounts of well water may cause overdraft conditions, which may impact mesquite plants.[121] Mesquite plants are vitally important to the region as a source of food and shelter to wildlife.[122] Thus, direct impacts to mesquite plants may indirectly impact wildlife and sensitive species. The BLM must take a hard look at impacts to mesquite plants in order to adequately assess indirect impacts to biological resources.

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7. The Project must evaluate impacts to creosote rings

The DEIS does not include ***any*** discussion about the Project's impacts to creosote rings. The BLM must evaluate conflicts between the Project and local

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[118] Cornett comments p. 7.

[119] DEIS p. 4.6-11; Cornett comments p. 6.

[120] Cornett comments p. 6.

[121] Cornett comments p. 7.

[122] *Id.*

regulations.[123] The Plant Protection and Management Ordinance in the San Bernardino County Development Code regulates the removal of plants.[124] The Code states that creosote scrubs may not be removed from a project site if they form a ring ten feet or greater in diameter.[125] The DEIS states that the Project site is comprised of creosote scrub vegetation that may be impacted by mowing and grubbing activities.[126] Impacting creosote scrubs that form a ring ten feet or greater in diameter would conflict with the County Development Code. Comment 095

The BLM must take a hard look at whether the Project will impact creosote rings and, thereby, conflict with the Development Code.

8. The BLM must evaluate the impacts of herbicide use

The BLM must take a hard look at impacts associated with herbicide use for weed abatement. The DEIS recognizes that the Project would directly affect native vegetation by allowing the increase of invasive weeds, such as Sahara mustard, to spread in the disturbed areas.[127] The Weed Control Plan submitted by the Applicant and the DEIS both note that herbicides would be used to control the weeds.[128] Comment 096

The BLM must not approve use of these herbicides until specific studies have been conducted indicating that they are harmless. According to Mr. Cornett, herbicides that may be approved can still cause a cancer outbreak in humans and/or serious mutations in wildlife.[129] The BLM must identify which herbicides will be used and disclose any studies that prove the herbicides are harmless, or take a hard look at the Project's impacts to human health and biological resources. Comment 097

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[123] 40 C.F.R. §§ 1506.2(d), 1502.16; NEPA Handbook p. 55; DEIS p. 3.6-2.

[124] San Bernardino County Development Code § 88.01.060.

[125] San Bernardino County Development Code § 88.01.060, (c).

[126] DEIS pp. 3.6-3, 4.6-11.

[127] *Id.* at pp. 4.6-5, 4.6-7, 4.6-11.

[128] *Id.* at p. 4.14-2; CHEVRON ENERGY SOLUTIONS, WEED CONTROL PLAN 6.7-6.8 (Jan. 2010).

[129] Cornett comments p. 5.

9. The BLM must evaluate the tortoise-proof fence's impacts to species' foraging patterns

The DEIS recognizes that construction of the exterior fence could increase the presence of natural predators and adversely affect desert tortoise breeding migrations.[130] However, the DEIS fails to recognize the fence's significant impacts to desert tortoise foraging. In a desert environment, where resources are in short supply, forcing desert tortoises to travel farther to locate food may cause significant stress on the species and mortality.[131] The BLM must take a hard look at the Project's impacts to desert tortoise foraging habits.

In conclusion, the BLM clearly did not consider every reasonably foreseeable significant impact of the Project. The BLM's failure to take a hard look at biological resources precludes a meaningful analysis by the public and violates NEPA. A revised supplemental DEIS/EIR must be prepared and recirculated by the BLM prior to Project approval.

B. The BLM did not consider all of the Project's impacts to water resources

T'Shaka Toure, an expert hydrologist, reviewed the DEIS with respect to significant impacts on water resources. Mr. Toure determined that the BLM failed to take a hard look at all of the Project's impacts. The BLM must revise its analysis of the Project's impacts to water resources.

1. The BLM did not discuss impacts associated with an increased operational water use

As discussed above, it is likely that the BLM underestimated the amount of water the Applicant would need to clean the solar panels. The DEIS, therefore, contains no discussion of what impact using *at least* 270,000 gallons of water per year would have on the environment. The BLM must reasses the impacts associated with increased operational water use.

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[130] *Id.* at p. 4.6-13.

[131] Cornett comments p. 4.

The first impact the BLM must reassess is whether the Project will cause an irreversible and irretrievable commitment of water resources. While the DEIS concludes that the Project will not cause an irreversible and irretrievable commitment of water resources to the point where they would not be available for other users, that conclusion was based on an arbitrarily low and unsupported water use estimate. A more reliable estimate is that the Project will use at least ***six times more water*** than what was disclosed in the DEIS. Therefore, it is likely that the Project may contribute to a significant overdraft of the aquifer and cause an irreversible and irretrievable commitment of water resources. The BLM must take a hard look at this significant impact. Comment 102

The second impact that the BLM must reassess is whether the large amount of operational water will cause artificial flood events to occur on the Project site. It is unclear whether this water will permeate into the soil and whether onsite drainages have the capacity to convey large amounts of water offsite. Runoff water may create ephemeral ponding locations and/or flooding events.[132] The BLM did not evaluate measures for containing large amounts of sheet flow and runoff water from this activity in the DEIS.[133] Comment 103

To mitigate impacts associated with runoff water, the BLM should require the Applicant to plant native emergent vegetation in locations where the flows will exit the Project site.[134] Native plants around the drainage outlet locations would provide beneficial cover and refugia for wildlife species.[135] The BLM should also require the Applicant to implement bioswales and/or catchment basins.[136] Bioswales and catchment basins could remove silt and pollution from surface runoff water, as well as provide another source of refugia, cover and food for wildlife.[137] Comment 104

The BLM must take a hard look at the Project's impacts to water users, the groundwater aquifer and flooding that result from using at least 270,000 gallons of water per year to clean the solar arrays. Comment 105

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[132] Toure comments p. 4.
[133] *Id.*
[134] *Id.*
[135] *Id.*
[136] *Id.*
[137] *Id.*

2. The BLM did not consider compliance with Section 1602 of the California Fish & Game Code

The Project requires a streambed alteration agreement from the CDFG under Section 1602 of the Fish & Game Code. However, the BLM has completely ignored this and any other State requirement. Fortunately, under NEPA, the BLM's effects analysis must identify possible conflicts between the Project and State laws and regulations.[138]

Comment

The California Fish & Game Code requires project applicants to obtain a streambed alteration agreement from the CDFG before substantially diverting, obstructing, or changing a river, stream, or lake.[139] A "stream" is defined as a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life.[140] This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.[141]

The CDFG must issue a streambed alteration agreement before this Project can proceed. The proposed Project site contains several streams under the jurisdiction of the CDFG.[142] Construction of the Project will alter the natural flow patterns of these streams where concrete pads and structures are installed, and within the solar array field.[143] Thus, development of the proposed Project will temporarily and permanently impact these streams.[144] The CDFG must issue a streambed alteration agreement before the Project Applicant impacts these drainage systems.

Comment 1

Because a streambed alteration agreement is required from the CDFG before modifications to the drainages can occur, the BLM must ensure that the Applicant complies with Section 1602 of the Fish & Game Code before approving the Project.[145] Failure to receive the necessary permits could jeopardize downstream

Comment 10

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[138] 40 C.F.R. §§ 1506.2(d), 1502.16(c); NEPA Handbook p. 55.

[139] CAL. FISH & GAME CODE § 1602.

[140] Comprehensive Biological Assessment p. 19 (quoting DEP'T OF FISH & GAME, A FIELD GUIDE TO LAKE AND STREAMBED ALTERATION AGREEMENTS SECTIONS 1600-1607 (1994)).

[141] *Id.*

[142] *Id.* at p. 59.

[143] DEIS p. 4.5-3.

[144] Comprehensive Biological Assessment p. 59.

[145] DEIS p. 2-16; Comprehensive Biological Assessment p. 59.

drainages and wildlife, as well as violate California law.[146] The BLM must revise the EIS to reflect and disclose compliance with the Fish & Game Code.

Comment 108 ctd.

3. The BLM did not consider compliance with the California Porter Cologne Water Quality Control Act

The Project Applicant must comply with waste discharge requirements ("WDRs") of the Regional Water Quality Control Board ("RWQCB"), pursuant to the California Porter Cologne Water Quality Control Act.[147] However, the BLM has completely ignored this and any other State requirement. Fortunately, under NEPA, the BLM must identify this conflict and evaluate the Project's compliance with the statute.[148]

Comment 109

The State regulates discharges of material into waters of the State pursuant to the California Porter Cologne Water Quality Control Act.[149] Discharges into waters determined to be within the jurisdiction of the State must abide by all prescribed WDRs. The RWQCB is required to prescribe WDRs for any potential discharge into State waters.[150]

The DEIS clearly states that the Project will discharge storm water into State waters.[151] The Project may also discharge at least 270,000 gallons of non-storm water runoff when the solar panels are cleaned.[152] Because the Project will discharge storm water and non-storm water into State waters, either the Colorado River Basin RWCQB or the Lahontan RWQCB must prescribe WDRs.

Comment 110

The BLM must identify that the Applicant has not applied for WDRs and no WDRs have been certified for the Project. Approval of the Project by the BLM may, therefore, promote a violation of California law by allowing the Applicant to proceed without all of the necessary permits and approvals. The BLM must evaluate the potential conflict with State law.

Comment 111

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[146] *See* Toure comments p. 5.
[147] CAL. WATER CODE §§ 13000 et seq. (2010).
[148] 40 C.F.R. § 1502.16(c).
[149] CAL. WATER CODE §§ 13000 et seq.
[150] CAL. WATER CODE § 13263(a).
[151] DEIS p. 3.5-2.
[152] Seely comments p. 1.

4. The BLM must ensure compliance with other federal and State laws governing jurisdictional waters

According to Mr. Toure, the jurisdictional delineation does not contain sufficient information to adequately and specifically determine jurisdiction of the waters on and impacted by the Project site.[153] Specifically, the delineation relies on incomplete soil data.[154] Further soils surveys are required to support the findings in the jurisdictional delineation.[155] As disclosed, the jurisdictional delineation is faulty.

Comment

C. The BLM did not consider all of the Project's impacts associated with new transmission and communications systems

1. The BLM must consider significant impacts associated with new communications systems

The BLM must provide a full and fair discussion of the impacts associated with the installation of new communication systems. The DEIS states that new communications systems between the site switchyard and the Cottonwood Substation would be required.[156] While the DEIS concludes that construction of the "[c]ommunications systems would be expected to require only minimal site disturbance to implement," there is no discussion or evidence to support this conclusion.[157] The BLM must provide more information about where utility poles will be placed, whether an offsite corridor must be established, and what impacts would be associated with installing new communications systems.

Comment 1

2. The BLM must consider all significant impacts associated with the Project's energy transmission

The BLM must provide a full and fair discussion of all impacts associated with the Project's energy transmission. As it is currently written, the DEIS provides nothing more than a list of upgrades the Project requires to transmit

Comment 1

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[153] Toure comments p. 5.

[154] *Id.*

[155] *Id.*

[156] DEIS p. 2-16.

[157] *Id.* at p. 2-16.

energy to the Cottonwood Substation, and it is unclear whether those upgrades will even be sufficient. The BLM must revise the DEIS to include an evaluation of the Project's transmission needs as well as all impacts associated with conveying energy from the Project site.

Comment 114 ctd.

The DEIS states that Phase I of the Proposed Action would interconnect to the existing Southern California Edison ("SCE") 33-kV transmission line without an upgrade to the existing line.[158] During Phase I, a 33-kV transmission line segment would be constructed across Foothill Road.[159] Phase II would require "reconductoring" (i.e. replacing the existing wire with heavier wire and reusing the existing cross arms and insulators) of the existing SCE transmission line back to the Cottonwood Substation.[160] It is unclear, however, whether Phase II would require additional upgrades. The DEIS acknowledges actual transmission line capacity would have to be verified by a Transmission Study.[161] The DEIS also states that new "transmission poles" would be installed.[162]

Comment 115

The BLM must conduct a Transmission Study and make it available to the public before approving the Project. If the BLM does not identify the transmission line capacity, it cannot know what transmission upgrades the Project will require. Failure to identify and describe all aspects of the Project also impacts the BLM's analysis of environmental consequences. This violates NEPA.

Comment 116

In addition, the BLM has not taken a hard look at impacts associated with the transmission upgrades it has already identified as necessary. For example, the DEIS must discuss impacts associated with reconductoring. If machinery is used to replace existing wire with heavier wire, there could be direct and indirect impacts to biological resources, traffic, visual, noise and air quality. The DEIS must also discuss all impacts with installing any new transmission poles offsite.

Comment 117

Agencies frequently overlook impacts associated with transmitting energy. The BLM must provide more information and discuss all of the impacts associated with connecting to the Cottonwood Substation. The impacts analysis must be supported with a Transmission Study.

Comment 118

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[158] *Id.* at p. ES-4.
[159] *Id.* at p. ES-13.
[160] *Id.* at p. 2-5.
[161] *Id.* at p. 2-20.
[162] *Id.* at p. 2-19.

3. The BLM did not consider cumulative significant impacts to transmission

The BLM's analysis of cumulative impacts to transmission is cursory at best. While the DEIS recognizes that complete build out of the Proposed Action would cause a cumulative effect, it concludes that "it is unlikely that the Proposed Action would add sufficient power to electric transmission system to require high voltage transmission lines or new substations."[163] The BLM's logic is faulty, and the agency must reassess its cumulative impact analysis.

First, without a Transmission Study, the BLM cannot conclude that energy from the Proposed Action would not be sufficient enough to require significant transmission upgrades. There is no evidence or basis for that determination. Second, cumulative impacts can result from "individually minor" actions that contribute to a collectively significant impact.[164] Thus, even if the Proposed Action itself would not add sufficient power to require significant transmission upgrades, the Proposed Action's contribution, along with the other energy projects in the region, may be sufficient.

The BLM must take a hard look at the Project's cumulative impacts to transmission. The BLM must also provide more information about the transmission needs of the other action alternatives so that a meaningful comparison can be made.

D. The BLM did not consider all direct and indirect noise impacts to sensitive species and sensitive receptors

The BLM must take a hard look at construction and operation noise impacts to sensitive species. The DEIS notes that sensitive receptors, such as nearby residences and special management areas, may be impacted by construction and operation noise from the Project.[165] There is no acknowledgement in the DEIS, however, that wildlife may be impacted by construction and operation noise. Sounds that are rare or even minor may have a negative impact on wildlife and sensitive species in the area.[166] The BLM must take a hard look at noise impacts to wildlife and sensitive species.

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[163] *Id.* at p. 4.11-4.
[164] 40 C.F.R. §1808.7.
[165] *Id.* at pp. 3.2-8 – 3.2-11.

Comment 123 ctd.

E. The BLM did not consider impacts from hazardous materials

Although the DEIS identified prospecting features in the Project area, the BLM failed to take a hard look at potential health risks associated with previous mining activities on the site.

Comment 124

Matt Hagemann, an expert in hazardous materials, reviewed the DEIS with respect to hazards associated on the site from remnants of hand-dug mining pits. In his comments, he concludes that unevaluated significant impacts to construction workers and future site workers from mining debris may occur.[167] Those impacts include dermal contact and ingestion of dust with soils that may contain metals at concentrations that are hazardous to human health.[168]

Comment 125

Mr. Hagemann recommends that the BLM conduct a Phase I Environmental Site Assessment to evaluate these potential human health risks. If the Phase I Assessment finds the mining debris to represent potential human health risks, a Phase II Environmental Site Assessment should be conducted to include sampling of the debris.[169] To assess the Project's impacts adequately, the BLM must conduct a Phase I Assessment and include the results in a revised DEIS that is circulated for public review.

Comment 126

F. The BLM did not consider all impacts to cultural resources

The DEIS acknowledges that five ethnic groups historically used the Proposed Action area: the Mohave, Kawaiisu, Southern Paiute (Las Vegas and Chemehuevi groups), Vanyume/Serrano and Western Shoshone. The BLM neglected to notify all of the tribes, however, about the Proposed Action.[170] The BLM's failure to consult with all of the tribes that have historic ties to the Project area precludes an analysis of all of the Project's foreseeable impacts.

Comment 127

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[166] Cornett comments p. 6.

[167] Hagemann comments p. 2.

[168] *Id.*

[169] *Id.*

[170] *See* DEIS p. 3.7-8 (neglecting to notify Chemehuevi tribe among others).

Comment

For example, the BLM did not notify the Chemehuevi tribe about the Proposed Action. The Chemehuevi tribe considers all of San Bernardino County and parts of Riverside, Kern and Inyo Counties its ancestral, historical homeland.[171] The Mojave River was a major trade route for the Chemehuevi and ancient burial sites, camp sites, "sleeping circles" and village sites may be found in the region.[172] Victorville was most likely the ancient Chemehuevi village of Atongiabit.[173]

Comment 1

Because Lucerne Valley is only twenty miles from the Chemehuevi's ancient village and major trade route, it is likely that the Chemehuevi used the Project area and have ties to the land. The BLM must consult with the Chemehuevi, and all tribes that have ties to the land, to determine if there are historical resources that have not been identified. Failure to do so arbitrarily limits the BLM's hard look at the Project's impacts and conflicts with Section 106 of the National Historic Preservation Act.

IV. THE PURPOSE AND NEED STATEMENT IS ARBITRARILY NARROW AND PROMOTES PRIVATE INTERESTS

An EIS must briefly describe the underlying purpose and need to which the agency is responding in proposing the alternatives, including the Proposed Action.[174] The BLM's *NEPA Handbook* mandates that the purpose and need statement for an externally generated action must describe the BLM's purpose and need, not an applicant's or external proponent's purpose and need.[175] The "need" for the action is the underlying problem or opportunity to which the BLM is responding with the action.[176] The "purpose" is the goal or objective that the BLM is trying to reach.[177] Clearly distinguishing the purpose and the need clarifies for the public and decision makers why the agency is proposing to spend large amounts of taxpayers' money, while at the same time causing significant environmental impacts.[178]

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[171] Letter from Charles F. Wood, Chairman, Chemehuevi Indian Tribe, to Doug Feremenga, San Bernardino County Land Use Services Department/Planning Division 1 (Nov. 12, 2009) (Attachment P).

[172] *Id.* at p. 2.

[173] *Id.*

[174] 40 C.F.R. § 1502.13.

[175] NEPA Handbook p. 35 (citing 40 C.F.R. § 1502.13).

[176] *Id.*

[177] *Id.*

[178] RONALD E. BASS ET AL., THE NEPA BOOK 89 (2d. ed. 2001).

Comment 130

The DEIS contains an arbitrarily narrow purpose and need statement that impermissibly promotes private objectives. The purpose and need statement sets out one simple goal: "to process a ROW application."[179] This narrowly defined statement implies that BLM stands to gain nothing more than a rubber-stamped document at the end of this process. It is nonsensical to think that the BLM would spend taxpayer money and impact the environment for such an inconsequential result.

Comment 131

The statement fits the Applicant's goals and objectives better than the BLM's. According to the DEIS, the Applicant has two goals: (1) promote solar technology, and (2) develop 45 MW of energy on public land to maintain a profit margin.[180] While it is unclear what the BLM would gain from the Project, a ROW application rubber stamped "approved" would clearly help the Applicant meet its goals. Thus, the arbitrarily narrow purpose and need statement promotes the Applicant's objectives instead of the BLM's.

V. THE DEIS OMITS REASONABLE ALTERNATIVES

Under NEPA, federal agencies must consider alternatives to their proposed actions as well as their environmental impacts.[181] The alternatives analysis has been called the "linchpin" of an EIS.[182] An EIS must "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated."[183] It is "absolutely essential to the NEPA process that the decisionmaker be provided with a detailed and careful analysis of the relative environmental merits and demerits of the proposed action and possible alternatives, a requirement that [courts] have characterized as 'the linchpin of the entire impact statement.'"[184] This is particularly true in cases where there may be "unresolved conflicts concerning alternative uses of available resources."[185]

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[179] DEIS p. 2-32; *see also* p. 1-1 ("BLM's purpose and need for the Lucerne Valley Solar Project EIS is to respond to CES's application . . . for a right-of-way (ROW) grant").

[180] DEIS p. 1-5.

[181] 40 C.F.R. § 1502.14.

[182] Monroe County Conservation Council v. Volpe, 472 F.2d 693, 697-98 (2d Cir. 1972).

[183] 40 C.F.R. § 1502.14(a).

[184] Natural Res. Def. Council v. Callaway, 524 F.2d 79, 92 (2d Cir. 1975) (citation omitted); *see also* All Indian Pueblo Council v. United States, 975 F.2d 1437, 1444 (10th Cir. 1992) (holding that thorough discussion of alternatives is "imperative").

[185] *See* 42 U.S.C. § 4332(E); California v. Block, 690 F.2d 753, 766-67 (9th Cir. 1982).

The range of alternatives to be discussed is governed by a "rule of reason." Reasonable alternatives are alternatives that are practical and feasible from a technical and economic standpoint, rather than simply desirable from an applicant's standpoint.[186] "The 'existence of a viable but unexamined alternative renders an environmental impact statement inadequate.'"[187] Courts have shown little reluctance in striking down an EIS that fails to include a thorough discussion of reasonable, less environmentally damaging alternatives.[188] Finally, an EIS must include a discussion of "natural or depletable resource requirements (and conservation potential of various alternatives and mitigation measures)."[189]

A. The BLM must consider alternate sites

1. The BLM's failure to consider alternate sites was arbitrary and capricious

Courts have considered whether federal agencies violate NEPA by failing to consider possible alternative sites for a proposed project adequately.[190] The federal agency will violate NEPA if it impermissibly determines that alternate sites do not have to be considered.[191] In this case, the BLM's determination that alternative sites do not have to be considered is impermissible.

Comment 1

The BLM's decision not to consider alternate sites is impermissible because it is based on an arbitrarily narrow purpose and need statement. The BLM may not adopt private interests to draft a narrow purpose and need statement that excludes alternatives that fail to meet specific private objectives.[192] Yet, that was the result of the process here. The BLM must consider reasonable alternatives, even if the Applicant does not like the alternative or is incapable of implementing the Project on an alternative site.[193] Thus, as drafted, the DEIS violates NEPA's basic requirement to consider alternatives.

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[186] NEPA Handbook p. 50; CEQ, Forty Most Asked Questions Concerning CEQ's NEPA Regulations No. 2(a) (1981).

[187] Resources Ltd. v. Robertson, 35 F.3d 1300, 1307 (9th Cir. 1993) (quoting Idaho Conservation League v. Mumma, 956 F.2d 1508, 1519 (9th Cir. 1992)); *see* Grazing Fields Farm v. Goldschmidt, 626 F.2d 1068, 1072 (1st Cir. 1980) (holding even existence of supportive studies and memoranda contained in administrative record but not incorporated in EIS cannot "bring into compliance with NEPA an EIS that by itself is inadequate.")

[188] *See, e.g.,* Dubois v. U.S. Dep't of Agric., 102 F.3d 1273, 1288 (1st Cir. 1996).

[189] 40 C.F.R. § 1502.16(f) (emphasis added).

[190] *See generally* Natural Res. Def. Council v. Evans, 232 F. Supp. 2d 1003, 1040 (N.D. Cal. 2002) (distinguishing holding in *Natural Resources Defense Council v. U.S. Dept. of the Navy* to determine whether failure to consider alternatives sites violated NEPA).

[191] *See Natural Res. Def. Council*, 232 F. Supp. 2d at 1040 (citing Natural Res. Def. Council v. U.S. Dep't of the Navy, 857 F.Supp. 734, 740 (C.D. Cal. 1994)).

[192] NEPA Handbook p. 50.

Comment 132 ctd.

2. The Project site is on undisturbed lands that are prone to flooding and may contain valuable mineral resources

The proposed Project site is not ideal for long-term energy generation. This particular site lies within mostly undisturbed desert habitat that contains untouched and intact environmental resources.[194] Disturbed areas, such as roads and sediment berms, make up only one percent of the site.[195] The rest of the site is characterized by desert scrub vegetation and desert washes.[196] Special-status species, such as the desert tortoise, were observed on the site.[197] In addition, many prehistoric and historic sites have been recorded between the Proposed Action site and the Victorville area.[198]

Comment 133

This particular site is also prone to flooding events. According to the National Oceanic and Atmospheric Administration, Lucerne Valley was flooded in 1958, 1960, 1965, 1967, 1969, 1972, 2001, and twice in 2005 just six days apart.[199] It is likely that even more flash flood events occurred, because the study is not comprehensive.[200] In fact, modeling, not included in the DEIS, suggests that flooding of the Project site is possible during episodic rain events.[201] Residents and resource agencies have also noted that this area is subject to intense flooding events, including flash floods.[202]

Comment 134

Finally, mineral extraction may be a beneficial and valuable use of the site. Gold, copper, silver, lead, sand, gravel, stone and uranium have all been prospected,

Comment 135

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[193] *See* CEQ, FORTY MOST ASKED QUESTIONS CONCERNING CEQ'S NEPA REGULATIONS No. 2(a) (1981).

[194] *See* DEIS p. 3.11-2.

[195] *Id.* at pp. 3.5-4, 3.6-4, 3.6-7.

[196] *Id.* at p. 3.5-4.

[197] *Id.* at p. 3.6-8.

[198] *Id.* at p. 3.7-8; *see also* Attachment P.

[199] *See generally* NAT'L OCEANIC ATMOSPHERIC ADMIN., A HISTORY OF SIGNIFICANT WEATHER EVENTS IN SOUTHERN CALIFORNIA (January 2007) (listing flood events).

[200] *Id.*

[201] DEIS p. 4.5-2.

[202] *Id.* at p. 4.5-2.

produced and/or processed within five miles of the Project site.[203] It is likely, given the importance of mining in Lucerne Valley's history and the presence of mineral resources around the Project site, that valuable mineral resources are located on the Project site.

Comm
135 ctd

Because the Project site is on undisturbed land with potentially valuable mineral resources that is also subject to intense and frequent flooding, it is not ideal for long-term energy generation. The BLM must consider other sites that will reduce the Project's impacts and support energy generation.

Commen

3. An alternate site on disturbed land not subject to frequent flooding would reduce the Project's environmental impacts and be more conducive to long-term energy generation

The BLM should consider an alternate site on disturbed land. In the desert to the north of the Project site, as well as in Kings and Fresno Counties, there is an extensive amount of abandoned farmland that would facilitate long-term energy generation while reducing the Project's impacts on environmental resources.[204] Both areas have existing infrastructure and are near roads and existing power lines.[205] Because both areas have successfully been used for long-term agriculture use, it is also unlikely that the frequency of flash floods would impact long-term energy generation. The BLM must evaluate siting the Proposed Action on these alternate sites, or risk failing to evaluate a viable alternative.

Comment

B. The BLM must consider an alternative site design with four sides

The BLM must consider a four-sided alternative site design for the solar facility. The Proposed Action has twelve sides and a very high boundary-to-area ratio. The design of Alternatives 4 and 5 are not specified, but the DEIS implies that the design of the alternatives would be irregular as well. The BLM should

Comment

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[203] *Id.* at p. 3.17-3.

[204] David Danelski, *Solar Energy Proposal Criticized Lucerne Valley: Chevron's Plans Could Disturb Threatened Species Some Say. Other Say Old Farmland is a Better Choice*, THE PRESS ENTERPRISE (July 31, 2009) (Attachment M) [hereinafter Attachment M]; Jason Dearen & Tracie Cone, *California Environmentalists, Growers Agree on Farmland Reuse for Solar*, DETROIT NEWS (March 22, 2010) (Attachment N) [hereinafter Attachment N].

[205] Attachment M; Attachment N.

consider a project design with four sides to reduce the boundary-to-area ratio and minimize impacts to biological resources and drainage systems. Comment 138 ctd.

The high boundary-to-area ratio increases the Project's impacts to biological resources. Instead of impacting a discreet parcel of land, the Project's impacts are spread out in different directions and on different parcels.[206] The solar arrays nearly surround one parcel and envelop large areas of three other parcels.[207] Comment 139

A twelve-sided configuration also impacts species movements more than a project with four sides.[208] Because there are twelve sides, there are twelve obstructions to migratory movement; there is no clear migratory path for species to move around the Project.[209] A project with four sides, however, would have a clearer path for species to move around.

The BLM should consider approving this alternative instead of the Proposed Action. The Proposed Action will impact desert tortoises significantly, and may also impact the Western burrowing owl and Mohave ground squirrel. Implementation of this alternative, however, may significantly reduce the Project's impacts to sensitive biological resources. Comment 140

C. The BLM must consider an alternative design the reduces impacts to drainage systems

The BLM must consider an alternative design that reduces impacts to drainage systems. As discussed above, the Project will impact the natural drainage systems that run through the Project site, which will in turn impact water quality and biological resources, as well as increase the potential for flooding on the Project site. The BLM should consider a site design that avoids, or significantly minimizes, these impacts. Comment 141

Mr. Toure provided diagrams of two alternative site designs.[210] Both site designs completely avoided or significantly reduced impacts to the blue-line Comment 142 drainages that run through the Project site.[211] These alternative site designs would also allow water from Project activities to be captured in bioswales and discharged into dry washes.[212] The BLM should consider this alternative to reduce the significant impacts to water resources caused by the Proposed Action.

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[206] Cornett comments pp. 1-2.
[207] *Id.* at p. 2.
[208] *Id.* at p. 2.
[209] *Id.* at p. 2.
[210] Toure Comments, Exhibits 3 and 4.

Comm
142 c

VI. NEPA REQUIRES THAT THE DEIS INTEGRATE ALL NECESSARY FEDERAL AND STATE ENVIRONMENTAL LAWS

If a Project requires State approval, the federal agency must cooperate with State and local agencies "to the fullest extent possible to reduce duplication between NEPA and State and local requirements."[213] In California, this requires that federal agencies cooperate with State and local agencies to prepare a joint EIS/EIR under CEQA.[214] BLM policy recommends that State agencies be identified as joint lead agencies at the earliest possible stage.[215]

The Project will require approval of a streambed alteration agreement from the CDFG and WDRs by the RWQCB. Thus, the Applicant will require approval under CEQA before it can proceed with Project construction. The BLM must work with the CDFG and RWQCB to facilitate this process. It is essential for the BLM to encourage preparation of a joint EIS/EIR at the earliest possible stage to avoid duplication of materials and resources and unnecessary delay.

Comment

The DEIS does not comply with CEQA. First, California courts have repeatedly held that "an accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient [CEQA document]."[216] Compliance with CEQA, therefore, requires that the environmental document provide an accurate, consistent and complete description of the Project. As discussed above, the DEIS fails to do so.

Comment

Second, CEQA imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation

Comment

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[211] *Id.* at p. 5.

[212] *Id.*

[213] 40 C.F.R. § 1506.2(b).

[214] CAL. CODE REGS. tit. 14, § 15222(a)(1) (2010).

[215] NEPA Handbook p. 114.

[216] County of Inyo v. City of Los Angeles, 71 Cal.App.3d 185, 193 (Cal. Ct. App. 1977).

measures.[217] The DEIS does not propose sufficient mitigation measures, however, to reduce or avoid the Project's impacts. For example, the DEIS states that tortoise-proof fencing and transmission poles installed for the Project could "cause increased predation of reptiles, small mammals, and small birds around the Proposed Action site because raptors would use the infrastructure for perches."[218] Predatory ravens are a leading cause of mortality for the desert tortoise.[219] The DEIS does not disclose, however, how perching will be discouraged on the tortoise-proof fence and the transmission poles. Thus, it is unclear whether the Project's impacts will be sufficiently mitigated.

Comment 145 ctd.

Because the CDFG and the RWQCB must issue permits ***before*** the Applicant can begin ***any*** development on the Project site, the BLM must abide by the requirements of NEPA and work with the State agencies to develop a joint EIS/EIR. This will avoid duplication of government materials and resources.

Comment 146

VII. CONCLUSION

The foregoing comments, together with those of the experts, establish that the DEIS simply cannot pass muster under NEPA. The only option is for the BLM to prepare a revised EIS/EIR that is recirculated for public review and comment. We respectfully urge the BLM to do so prior to taking any action on the Applicant's pending federal permit applications to ensure that the basic requirements of NEPA are met.

Comment 147

Please do not hesitate to call if you have any questions or require any further information in support of these comments.

Sincerely,

Robyn Purchia

Robyn C. Purchia

RCP:cnh
Attachments

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[217] CAL. PUB. RES. CODE §§ 21002, 21002.1.
[218] DEIS p. ES-9; *see also* 4.6-8.
[219] *Id.* at p. 4.6-13.
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COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR LUCERNE VALLEY SOLAR PROJECT

ATTACHMENTS

Attachment A	Seely Comments
Attachment B	Cornett Comments
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Attachment E	Observations on Photovoltaic Cell Panels
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Attachment K	Current Status of the Mohave Ground Squirrel
Attachment L	Plan of Development
Attachment M	CDFG Staff Report on Burrowing Owl Mitigation
Attachment N	*Press Enterprise* – Solar Energy Proposal Criticized Lucerne Valley: Chevron's Plans Could Disturb Threatened Species, Some Say, Others Say Old Farmland Is a Better Choice
Attachment O	*Detroit News* – California Environmentalists, Growers Agree on Farmland Reuse for Solar
Attachment P	Letter from Charles F. Wood, Chemehuevi Tribe

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Attachment B

JWC
JAMES W. CORNETT
ECOLOGICAL CONSULTANTS
(760) 320-8135 FAX (760) 320-6182

May 13, 2010

Ms. Robyn C. Purchia
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, California 95814

Subject: **Comments on the biological resource information provided in the Draft Environmental Impact Statement for the proposed Chevron Energy Solutions Lucerne Valley Solar Project**

Dear Ms. Purchia:

This letter contains my comments on the biological resource information presented in the Draft Environmental Impact Statement (DEIS) prepared for the Chevron Energy Solutions Lucerne Valley Solar Project (LVSP), located near the unincorporated town of Lucerne Valley, San Bernardino County, California. The applicant proposes to construct a 45-megawatt photovoltaic solar plant on 516 acres of federal land managed by the Bureau of Land Management.

Since 1980 I have been a biological and environmental consultant specializing in sensitive species issues in the desert regions of California. I have conducted and written nearly 600 biological studies and impact analysis reports including focused studies on the Desert Tortoise, Bighorn Sheep, Burrowing Owl and Least Bell's Vireo. My research activities have focused on the ecology of desert plants with dozens of peer-reviewed research papers most recently focusing on Joshua Tree ecology. I have additional experience as a college and university instructor teaching courses in wildlife management, conservation of natural resources, the Desert Tortoise and ecology of the Joshua Tree. My educational background includes a B.A. degree in biology from the University of California at Riverside and an M.S. degree in biology from California State University at San Bernardino.

I have reviewed the DEIS focusing on the acknowledged and potential impacts to biological resources and suggested mitigation for significant adverse impacts. I have a number of concerns with the project as proposed as well as the DEIS including the site plan, resource use analysis, survey methods and inconsistencies in findings. My specific concerns are described below.

Site Configuration Maximizes Impacts To Surrounding Lands

The project site has a very irregular boundary. Such a site configuration has a high boundary to area ratio with the result that any disturbance within the site boundaries occurs much closer to adjacent properties and is more likely to impact them. This causes an increased impact to biological resources.

The Project has ten sides, nearly surrounds one 40-acre parcel, and envelops three other parcels. As designed, the Project's footprint extends beyond the parcel and significantly onto the adjacent parcels. Thus, the Project would directly impact species on other parcels that would not otherwise be impacted if the Project design had a more regular boundary. In addition, the ten-sided configuration impacts species movements more than a project with four sides.

A simple square or rectangle configuration would only share a single boundary with any surrounding parcel and reduce impacts to biological resources. Since the applicant is requesting to use BLM-managed land, the BLM should provide a rectangular area to minimize impacts to surrounding lands.

Alternative 5

Serious consideration should be given to Alternative 5 first described on page ES-4 of the DEIS. Reducing the impacted area by 45% (from 433 to 238 acres) results in only a 33% reduction in electrical energy production. Since the project site is known to be occupied desert tortoise habitat, reduction in impact footprint with the benefits of increased efficiency in terms of megawatts per acre of the LVSP would seem desirable.

Cumulative Impacts to the Officially Threatened Desert Tortoise

The Desert Tortoise is classified as an officially threatened species by both the state and federal governments and it occurs on the LVSP site. In addition to the LVSP, I have identified at least 5 more electrical generation facilities being proposed in the general area:

1. Granite Wind (CACA 48254): 84 MW on 2,134 acres of land, located 6 miles east of Apple Valley.

2. Calico Solar (CACA 49537/49539): 850 MW on up to 8,264 acres, located 37 miles east of Barstow.

3. SES Solar Six (CACA 04939): up to 5,212 acres, located adjacent to the above facility.

4. AES Daggett Ridge Wind (CACA 049575): 92.5 MW on 1,975 acres of land, 6 miles southeast of Barstow and 5 miles SW of Daggett.

5. LSR Pisgah Solar (CACA 050706): 17,920 acres, located six miles to the east.

Dozens of additional projects are in the planning process elsewhere in the California deserts and many are located in known desert tortoise habitat.

Considered together, the total loss of tortoise habitat by the five facilities listed above is potentially 35,505 acres. Indirect impacts through road kills due to increased vehicular traffic in the area, loss of foraging habitat for tortoises on adjoining lands, and barriers to dispersal can be expected to impact tortoises on an even greater area. Considering all the projects currently proposed on lands managed by the Bureau of Land Management, the desert tortoise is facing an assault on its habitat greater than any other threat since the California population was officially listed as threatened in 1990.

The DEIS fails to take into account the long-term loss of tortoise habitat from multiple projects, increased demand for homes in the vicinity of the power plants, increased area traffic, increased needs for services, recreation, and impacts of domestic pets. It fails to consider tortoise and other wildlife habitat requirements, territoriality, seasonal movements to food and shelter resources and the effects of increased competition for diminishing resources.

A methodology used to determine cumulative impacts is absent and assumptions made are erroneous. For example, on page 4.6-16 the DEIS states “there are no site-restricted populations.” Nearly every terrestrial animal ever studied, including the desert tortoise, has site-restricted populations—some seasonally, most permanently (Ernst and Lovich, 2009). “Varied construction schedules” make little difference to wildlife since most show extreme site fidelity; they are not going to move to the area where there is no construction and then return to a site because the project has been completed. Finally, animals, including the desert tortoise, routinely attempt to return to locations where they feed, find shelter or breed. Unable to follow lifelong routines causes stress, can result in territorial battles and is may result in death (Van Devender, 2002).

County Joshua Tree Ordinance

The County of San Bernardino has an ordinance regarding the disposition of Joshua trees on project sites. The DEIS states on page 1-12 that the “BLM will follow, to the extent possible, county ordinances.” The BLM should demonstrate that it will be following the county plan with respect to Joshua trees or explain why that is not possible. Table 1-1 supposedly shows the rules and ordinances the County of San Bernardino has with respect to the project site. However, the table does not indicate there is a County ordinance regarding Joshua trees. This issue needs to be considered and addressed.

Temporary Relocation of Plant Species

My experience with desert plant salvaging, particularly with yuccas such as the Joshua tree, shows a very high mortality typically exceeding 50% and sometimes reaching 100%. Assuming that relocation is proposed as mitigation to offset a significant adverse impact, this is an unacceptable solution as the impact is not “temporary” (page ES-8). Consideration and discussion should be provided for alternative solutions including leaving old but vigorous plants in place and designing the project around them.

Impacts Resulting From Cutting and Grubbing Site Vegetation

On page ES-8 the DEIS describes impacts to vegetation on 420 acres as a result of "mowing" and/or "grubbing" activities. These impacts are not sufficiently assessed, however. First, because of recurring drought, as experienced in 2009 for example, desert plants often do not "re-sprout" after very severe impacts such as mowing or grubbing (Webb et.al. 2009). Desert perennials concentrate leaves, buds, blossoms, fruits and seeds in the upper portions of the plant, the part destroyed during mowing or grubbing. Thus, the impacts of these destructive activities are profound and, more often than not, permanent. Approving the LVSP requires that adverse impacts to vegetation be seen as if the entire site were graded. The final EIS must, at the very least, acknowledge and address this fact.

Table 2-1 on page 2-6 refers to the area as being "brushed." The DEIS should define "grubbing," "mowing," and "brushing." I suspect brushed is another word for "grubbed." Grubbing, and presumably brushing, has the same if not greater impact than grading because there is a potential for deeper penetration of the soil by the steel teeth of plows. The word "brushed" and the acreage that is to be impacted misleads the reader.

Transmission Lines, Reconductoring, and Communication Systems

There is insufficient information to determine what lands outside the project site will be impacted by transmission lines, connections and reconductoring. No transmission lines cross the site today. Where will the connections be made? What impacts to lands outside the project site will result from reconductoring?

Additionally, on page 2-16 the DEIS states that new utility poles will need to be installed to provide for site communications. Where will they be placed? Does an offsite corridor need to be established? These routes should be evaluated with regard to biological impacts, particularly potential impacts to the desert tortoise

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Site Security and Fencing Impacts

Perimeter fencing will prevent the movement of medium and large animals across and through the site. In a desert environment where resources are usually in short supply, forcing animals to move longer distances to locate food can result in significant stress and even mortality. This has particular significance with regard to the officially threatened desert tortoise. Fencing the site with tortoise-proof fencing may keep tortoises off the project site but does not address the loss of foraging habitat for tortoises surviving on lands surrounding the project site. The BLM needs to address the issues resulting from restricted wildlife movement.

Vegetation Treatment and Weed Management

The use of any chemical dust control agent or weed eradication compound should be prohibited unless it can be shown that independent field studies have been completed indicating the chemicals are harmless to wildlife. Since it is highly unlikely that such studies have been done, the use of such chemicals should be strictly prohibited. Though certain herbicides and pesticides may be approved, rarely have studies been conducted indicating they are harmless. All to often they are used until there is a cancer outbreak in humans living near the site, the applicators contract leukemia, or serious mutations in wildlife appear. Herbicides and pesticides, although approved, should not be used until they have been tested in real world situations.

Decommissioning The Facility

A Restoration Plan should be prepared at the time the EIS is prepared so that all aspects of the project can be evaluated before it is approved. For example, revegetation of a project site inevitably impacts native species. Applicants sometimes revegetate with creosote bushes from Arizona or Texas. However, creosote bushes from other states are genetically different and may adversely impact California creosote bushes when they produce a first generation of cross-pollinated plants. The restoration/decommissioning plan should be made available to the public before approval, not after, so that impacts such as this can be assessed.

Impacts to Underground Aquifer

As described on page ES-5, significant quantities of water would be used for dust suppression during constructing and to clean solar panels when the facility is operational. Presumably there would be additional water use for employee needs and landscaping though there is no mention of these latter uses in the DEIS.

Whether or not the water comes from wells on site or from off site sources, it can be expected that there will be impacts to the local underground aquifer. (According to a company brochure available on the internet at http://www.gswater.com/customer_guide.pdf, Golden State Water Company, the utility that provides water in the Lucerne Valley area, operates 250 wells in the state including wells in the Lucerne Valley area.) There is no mention of impacts to the local aquifer as a result of this project in the DEIS.

Overdraft of the groundwater aquifer may impact area mesquite plants. Mesquite plants are important to wildlife as food and shelter (Stevens and Meretsky, 2009). No mention of this issue and its ramifications to plant and animal life was found in the DEIS. The issue needs to be acknowledged and addressed.

Auditory Disturbances

Compared with the no project alternative and the existing conditions, there will be a significant increase in noise levels during both construction and operation of the LVSP. Yet the DEIS makes scant mention of the impact increased noise levels will have upon wildlife. A body of literature exists indicating that even rare and minor novel sounds can negatively impact wildlife (Dimmitt and Ruibal, 1980; Pavlik, 2008). This issue needs to be acknowledged and addressed.

Confusion on Disturbance

The DEIS states that the entire project area, 516 acres, has been "previously disturbed" but does not mention the extent or nature of the disturbance. Satellite imagery from Google Earth does not reveal previous disturbance and climax vegetation appears to dominate the site. In addition, the plant and animal species lists indicate the expected native biota is present. Evaluation of impacts cannot be thoroughly addressed when the existing conditions are erroneously described. An undisturbed site has maximum value for native species. A disturbed site has far less value to native plants and animals.

Mohave Ground Squirrel

The analysis of presence or absence of the State Threatened Mohave Ground Squirrel is inadequate. No trapping was done within the project boundaries, the species is known to occur within 5 miles of the project site, and it is not possible to distinguish the Mohave Ground Squirrel from the very similar Round-tailed Ground Squirrel in the field even with binoculars. I consider this issue unresolved. Because of its status as a state-threatened species, a focused study on the presence or absence of the Mohave Ground Squirrel is warranted.

Deficiency of Burrowing Owl Surveys

Burrowing owls surveys were conducted concurrently with desert tortoise surveys. Owl surveys are conducted with binoculars and frequently involve looking upward and listening for owl calls. Tortoise surveys do not normally involve the use of binoculars and would not involve the participating biologist to glance upward or listen for calls. In addition, many biologists are specialists in either tortoise surveys or owl surveys. For these reasons I question the reliability of either survey but particularly the owl survey when the biologist is attempting to do the two surveys simultaneously. There is also no specific mention as to the hours in which the owl surveys were conducted.

Rare Plant Surveys

It appears that rare plant surveys were done on only two days and no methodology was presented. In addition, precipitation for 2009 was far below average for the region which would result in many ephemeral plant species not germinating and, therefore, not detected. Since the biological report indicates that up to 12 sensitive plant species might occur in the vicinity of the project site, a more intensive search in a year of average or above average precipitation seems warranted.

Golden Eagle Survey

The United States Fish & Wildlife Service is currently developing protocols for golden eagle surveys, a fully protected species under both federal and state laws. Golden eagles are known to occur in the area (Garrett and Dunn, 1981), nesting sites are within 10 miles of the project site, and typical prey species occur on the project site as shown in the biological species list in the DEIS. It should be expected the project site lies within the hunting territory of a golden eagle pair. A focused survey for this species should be undertaken.

I appreciate the opportunity to comment on the deficiencies and omissions in the project design as well as the DEIS. Please do not hesitate to contact me should you require additional clarification or analysis.

Sincerely,

James W. Cornett

Literature Cited In Comments

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Webb, R. H., L. F. Fenstermaker, J. S. Heaton, D L. Hughson, E. V. McDonald, D. M. Miller. 2009. *The Mojave Desert: Ecosystem Processes and Sustainability.* University of Nevada Press, Reno, Nevada.

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JAMES W. CORNETT - CURRICULUM VITAE - 2010

Personal Data

Name---James W. Cornett

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Telephone Number---760-320-8135; Fax 760-320-6182

Place of Birth---South Gate, California, U.S.A.

Education

B.A., Biology, University of California at Riverside, 1976

M.S., Biology, California State University at San Bernardino, 1980

Positions Held

January, 1974 - Present
Owner-principal, JWC Ecological Consultants, P.O. Box 846, Palm Springs, California 92263

January, 1996 – June, 2004
Director of Natural Sciences, Palm Springs Desert Museum, 101 Museum Drive, Palm Springs, California 92263, 760-325-7186.

January, 1980 – December, 1995
Curator of Natural Sciences, Palm Springs Desert Museum

September, 1976 - December, 1979
Assistant Curator of Natural Science, Palm Springs Desert Museum

September, 1975 - June, 1976
Natural Science Instructor, Palm Springs Desert Museum

January, 1973 - Present
Environmental Columnist (weekly), Desert Sun-Gannett Newspapers, P.O. Box 2734, Palm Springs, California 92263.

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January, 1981 - Present
Biology Instructor, University of California Extension, Riverside, California 92521, 909-787-4105. Courses taught include: Mammals of the Colorado Desert, Endangered Species of the California Deserts, The Desert Tortoise, Desert Bighorn Sheep, Ecology of Joshua Tree National Park, Ecology of The North American Deserts, Ecology of The Colorado Desert and Ecology of the Coachella Valley.

October, 1975 - June, 1983
Biology and Natural Resources Instructor (part-time), College of The Desert, 43500 Monterey Road, Palm Desert, California 92260, 760-346-8041.

January, 1973 - June, 1974
Assistant Naturalist (part-time), The Living Desert, 47900 Portola Avenue, Palm Desert, California 92260, 760-346-5694.

Professional Affiliations

American Society of Mammalogists
Bureau of Land Management Colorado Desert Advisory Committee
California Botanical Society
California Native Plant Society
Ecological Society of America
Herpetologists League
International Palm Society
Joshua Tree National Park Association, Board Member
Southern California Academy of Sciences
Southern California Botanists
Southwestern Naturalists' Society
Western Field Ornithologists

Touré Associates
Specializing in biological & regulatory services

Attachment C

May 17, 2010

Ms. Robyn Purchia
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

Subject: Comments on the Water Resources/Hydrology Assessment and Wetland and Jurisdictional Delineation Prepared for the Lucerne Valley Solar Project

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Dear Ms. Purchia:

This letter summarizes my review of the proposed Lucerne Valley Solar Project as it relates to hydrology and jurisdictional drainages [Exhibits 1 and 2]. My comments are based on a review of **Section 4.5 Water Resources/Hydrology of the Draft Environmental Impact Statement (DEIS)** prepared by Ecology and Environment, Inc. and **Section 3.4 Wetland and Jurisdictional Delineation of the Comprehensive Biological Assessment** prepared by Chambers Group, Inc, for the proposed Lucerne Valley Solar Project (Project).

I am an environmental ecologist with experience in water resources and hydrology. I have 19 years of professional experience in ecology, hydrology, conservation biology, and natural resource management. For the past seven years, I have served as an environmental consultant focusing on ecological resources and open space planning. As a biologist and regulatory specialist, I have a strong background with and working knowledge of regulatory issues such as Sections 404 and 401 of the Clean Water Act, Section 1602 of the California Fish & Game Code, the Endangered Species Act, and CEQA/NEPA Compliance. My regulatory specialist experience includes training and certification in *Wetland Delineation with Emphasis on Hydric Soils* and *Arid West Supplement Wetland Delineation; Hydrogeological Site Characterization and Monitoring Well Construction; and Stormwater Pollution Prevention for Construction Sites.* In addition, I have working knowledge of the recently implemented EPA and Corps *Clean Water Act Jurisdiction Following Rapanos v. United States* and the northern, central and southern California counties Natural Community Conservation Plan (NCCP) & Habitat Conservation Plan (HCP), western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), and several other scientific, biological, and regulatory issues pertaining open space planning and the acquisition of regulatory permits. My educational background includes a B.S. in Zoology/Chemistry and a M.S. in Biology/Ecology from Howard University in Washington, DC.

For the proposed Project, I have concerns regarding impacts to the water resources that occur within and adjacent the proposed Project site. These concerns are based after reviewing the environmental documents prepared for this Project.

BACKGROUND

The Project proposes to develop a 45-megawatt photovoltaic solar plant and associated facilities on 516 acres of federal land managed by the Bureau of Land Management (BLM). The proposed Project is located on unincorporated land in the Mojave Desert, approximately eight miles east of Lucerne Valley. The project would connect to an existing Southern California Edison distribution line located north of the site. The Lucerne Valley Solar Project is located south of Foothill Road and is bordered by Donaldson Road on the west and a drainage that runs approximately 1,300 feet east of Santa Fe Fire Road on the east. The site is specifically within the Cougar Buttes, California USGS 7.5-minute topographic quadrangle map in Sections 19, 20, 29, and 30 of Township 4 North, Range 2 East and in Section 24 of Township 4 North, Range 1 East [Exhibits 1 and 2].

Modifications to Natural On-Site Drainages

The project proposes to alter the natural drainage patterns onsite[1] but fails to mention 1) which drainages would be altered, 2) where specific modifications will occur, and 3) to what extent the drainages will be modified. To enable an adequate understanding of the project's impacts the documents must indicate whether upstream drainages would be altered and whether off-site impacts may result from on-site alterations.

The documents also did not mention what type of material the applicant would use to fill the drainage streambeds within and outside of the project boundary. Specifically, it is not clear whether natural substrate, cement, soil cement, and/or a different fill material will be used for bank stabilization and protection for transition and curve segments of the drainage reaches.

Natural substrate, consisting of compacted earthen material along with rip rap, would be beneficial to plants and wildlife. Wildlife and plant species require natural substrates and adequate vegetation to establish metapopulations and species richness and abundance. In drainage reaches that run along a linear or meandering course, the use of natural substrate instead of cement would be especially beneficial for wildlife species. The natural substrate on the drainage bottom and side slopes would provide an opportunity for vegetative establishment, food source, cover, and refugia for the Desert tortoise, Desert kit fox, Burrowing owl, small mammals, amphibians and reptiles.

If cement is proposed for grade control structures and bank protection the DEIS should specifically say so and provide detailed accompanying diagrams. Because the use of cements is not beneficial to wildlife species it should only be used within the project site, immediate surroundings, dry washes, and outlet drainage areas to reduce impacts to wildlife species in the surrounding area. By replacing the existing natural bottom substrates and side slopes with cement the project would have a significant impact on wildlife species.

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[1] Biological Assessment for the Chevron Solar Project Site Lucerne Valley California. p. 6.

Any impacts to water resources and species should be mitigated where feasible. However, the DEIS and supporting documents do not describe any mitigation measures. Feasible mitigation measures include compensation to restore and enhance bioswales and downstream drainages. As flows exit the project site downstream beneficial uses for wildlife species should be enhanced and appropriate mitigation measures taken due to the upstream impacts.

Storm Drainage

Storm water will either be drained from the site through designated drainages or through natural onsite drainages. The Project's environmental impacts will vary depending on which method is used to convey storm water. For example, installing designated drainages would require additional grading. In addition, if natural onsite drainages are used, they may not have sufficient carrying capacity to move the water offsite. The DEIS and the supporting documents fail to show the proposed storm drain system. Without information regarding the storm drain system, I am unable to analyze grading for the project and how flood events would be managed onsite and offsite. This information is normally included in a Hydrology Report.

No Hydrology Report or Finalized Storm Water Pollution Prevention Plan

The appendices to the DEIS do not include a Hydrology Report and final Storm Water Pollution Prevention Plan (SWPPP). The BLM's failure to provide a Hydrology Report and SWPPP results in a lack of information regarding water resources. The BLM must provide a Hydrology Report that provides information on flows within the Project site and describes best management practices for implementing restoration and enhancement mitigation measures. The BLM must also provide a finalized SWPPP so that mitigation measures are fully disclosed to the public.

A Hydrology Report would provide the essential information regarding the water table and natural flow pattern onsite and offsite. It also typically includes a description of how silt and pollution would be removed from surface runoff water, impacts to refugia, cover and food sources for riparian birds, small mammals, amphibians and reptiles, and whether native vegetation could occur in existing locations for restoration or enhancement measures. All of the information normally contained in a Hydrology Report is essential to determine the best management practices for implementing restoration and enhancement mitigation measures.

The SWPPP has also not been completed. Mitigation measures to address flooding impacts cannot be implemented without a SWPPP. The SWPPP ensures adequate steps are taken to keep storm water from picking up pollutants or sediment and creating problems downstream.

The Potential for Flooding Onsite

The potential for flooding onsite and in the surrounding area has not been adequately discussed nor does it appear that a mitigation plan has been prepared to address the possibility if flooding was to occur.

The DEIS[2] (Effect WATER-1: Increase the potential for flooding hazard. p. 4.5-2) states, *"... the Proposed Action would not significantly increase the potential for flooding in the watershed or its subbasin."* but makes no mention that the project site and local vicinity have been prone to flooding. According to BLM (2009), *"residents and resource agencies have noted that this area is subject to intense flooding events, including flash floods."* The statement above is misleading and does not provide information regarding local flooding events and occurrences.

The BLM must provide a complete description of the Project's propensity to flood. Specifically, the BLM should discuss the flooding history on the proposed project site. Information on the "potential for flooding" should be relevant to the actual project site and not only address the larger waterbodies (i.e., watershed and subbasins). In addition, the DEIS should disclose whether the drainages overflow during heavy rain events or only convey water within their reaches.

The use of large amounts of water for cleaning the solar panels may also cause flooding events. To mitigate impacts associated with runoff from the solar panels, mitigation measures addressing sheet flow and runoff water must be discussed and implemented. These measures do not appear to have been adequately addressed in the DEIS.

To mitigate flooding impacts the BLM must consider planting native emergent vegetation in locations where flows will exit the project site. Water flowing from the project site could potentially create ephemeral ponding locations and/or locations for flooding. By planting native emergent vegetation within the surrounding drainage outlet locations beneficial cover and refugia for wildlife species, such as riparian birds, the Desert tortoise, the Desert kit fox, small mammals, amphibians, and reptiles could occur.

The BLM must also consider implementing bioswales and/or catchment basins in order to capture and contain water flowing from the project site and mitigate flooding impacts.. An adequate design and use of bioswales could provide beneficial uses for the removal of silt and pollution from surface runoff water and provide a source of refugia, cover and food source for riparian birds, small mammals, amphibians and reptiles. The bioswales and catchment basins could capture flows from natural rain events and washing of the solar panels.

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[2] Draft Environmental Impact Statement. Lucerne Valley Solar Project. 4.5 Water Resources/Hydrology, p. 4.5-2.

Jurisdictional Delineation

The wetland jurisdictional delineation (JD) states the soils data has limitations due to the lack of ground truthing. Based on the last sentence of each paragraph for Group 1, 2, and 3 it is unclear whether all of the drainage features on the project site have been ground truthed during the delineations. These statements lead me to question if further surveys are required to determine the actual soil profiles for the proposed development region of the project. The JD may be providing information on soil series that may not be accurate. If the information is not accurate, impacts to waters of the United States and the State may be more or less than what was identified in the Comprehensive Biological Assessment.

The BLM Must Consider an Alternate Site Design

Based on the diagram provided in the JD report it appears that no effort or consideration was made to avoid impacting the drainage features. In my opinion environmental impacts could be reduced if BLM were to approve an alternative site plan and/or site layout (see Exhibits 3 and 4). By avoiding the blue-line drainages and arranging the solar panels in a manner that does not impact drainages, every CDFG jurisdictional feature impact would be reduced.

Two alternative site plans have been provided to illustrate how realignment of the site plan could be accomplished to avoid impacting the drainage features (Exhibits 3 and 4). Moving the solar panels around the drainages or avoiding the drainages towards Donaldson Road altogether will allow the water to pass through the area with minimal impacts to sensitive biological resources. Additionally, an onsite drainage plan could be designed that would allow water from project activities to be captured in bioswales and/or catchment basins as a first-flush measure prior to being discharged into the dry washes that surround the project site. An additional option would be to retain the nuisance flows entirely within the project site in low growing vegetative basins. Exhibits 3 and 4 depict examples of how natural occurring drainages can be avoided on 516 acreages of land for the solar energy project.

The Applicant Has Not Received the Necessary Approvals and Permits from State Agencies

Based on a review of the permitting requirements, the Regional Water Quality Control Board (RWQCB) will need to issue a Waste Discharge Requirement (WDR) and the California Department of Fish and Game (CDFG) will require a 1602 Streambed Alteration Agreement (SAA) for this project.

Based on the topography of the proposed Project site and the beneficial uses associated with blue-line drainages, such as aquatic resources and refugia for wildlife and plant species, a CDFG 1602 SAA should be required. However, there is no mention in any of the referenced documents that a 1602 SAA is being submitted to the CDFG. Project implementation without a 1602 SAA could jeopardize downstream drainages and wildlife species to include the Desert tortoise, Desert kit fox, Burrowing owl, small mammals, amphibian and reptile species that benefit from natural rain events resulting in flows in the drainages and across the project site.

The lack of adequate mitigation measures to protect beneficial wildlife uses would be an error in resource management planning.

A SAA would include mitigation measures to prevent further degradation and impacts to drainage features downstream of the project site. In the absence of a SAA the project applicant will avoid providing compensation for impacts to natural drainage features and wildlife species . In order to ensure implementation of appropriate mitigation measures for the protection of Desert tortoise, Desert kit fox, Burrowing owl, small mammals, amphibians and reptiles, the applicant should be required to submit a 1602 SAA permit application. A 1602 SAA permit approval would prevent further degradation of streambed and wash vegetation that is functionally beneficial for wildlife species.

CONCLUSION

As a result of the issues discussed herein, and because adequate information has not been presented, it is my professional opinion that the BLM did not take a harder look at the Project environmental consequences. In particular, the Project could have significant impacts to:

- Wildlife species that utilize the onsite drainage features during heavy rain events.
- An increase in the natural flow regime of the project area.
- Increased potential of flooding onsite and in the surrounding area.
- Downstream drainage patterns.
- The existing storm drain system.

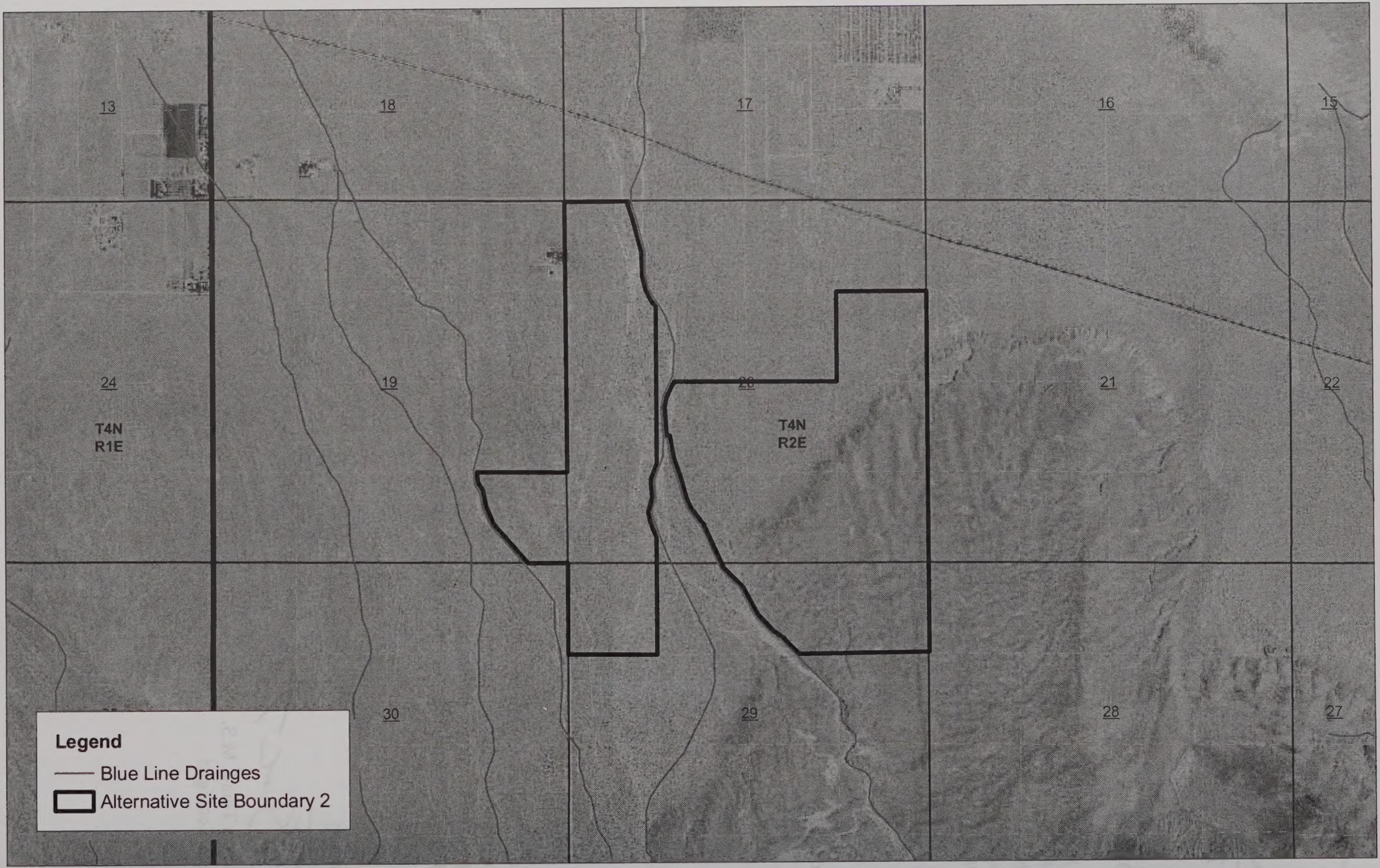
Additionally, from a regulatory permitting perspective:

- The lack of a CDFG 1602 SAA could further jeopardize wildlife species by not ensuring measures are taken to protect wildlife species that benefit from the onsite drainage features.
- The lack of a CDFG 1602 SAA would not ensure that impacts to the onsite drainage features area properly mitigated, if impacted.
- A completed Hydrology Report would be required for submission with the WDR and 1602 SAA application packages.
- The site plan does not represent a footprint that could avoid some of the drainage features.

Further review and strengthened alternatives will be required to determine whether sensitive water resources may be reduced to a level of less than significant. As such, strengthening of the proposed alternatives, further review of soil series, and a detailed flow pattern (tentatively proposed) are required before the Project can be adequately reviewed and analyzed.

Sincerely,

T'Shaka Touré, M.S.
Senior Ecologist



Touré Associates

Exhibit 4

Alternative Site Plan 2

Lucerne Valley Solar Project
Water Resources / Hydrology Review

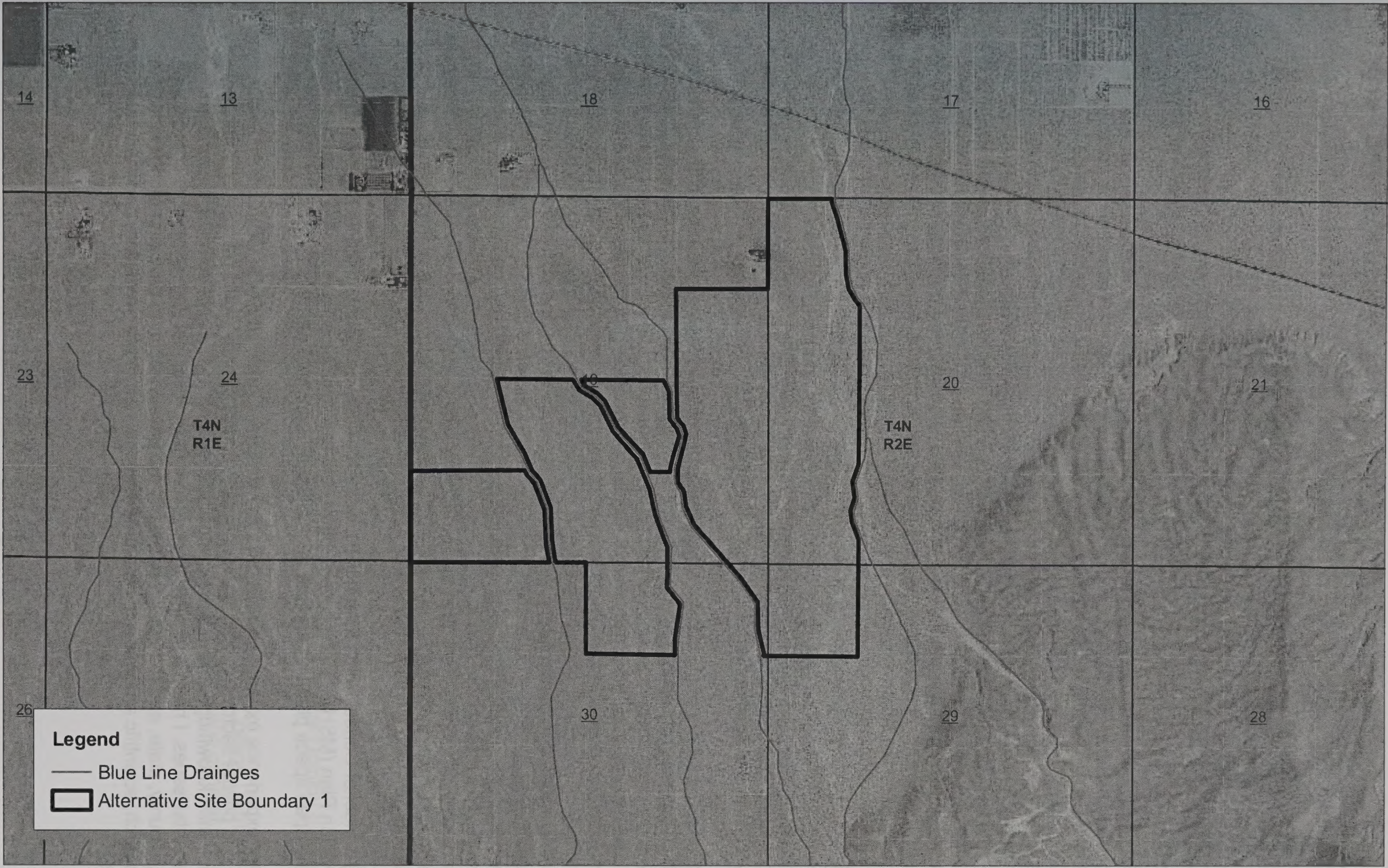


Exhibit 3

Alternative Site Plan 1

Lucerne Valley Solar Project
Water Resources / Hydrology Review

Touré Associates
Specializing in biological & regulatory services

T'SHAKA TOURE
tshaka@toureassociates.com

I've worked in the field of science and have 19 years of diverse experience in research biology with an emphasis in wetland and restoration ecology, open space planning, wildlife monitoring and surveys, and regulatory permitting. I've conducted wildlife studies on ants, aquatic insects, bats, birds, bees, small mammals, amphibians and reptiles. In addition, I've designed, conducted and supervised studies on vernal pools, created ponds and wetlands, environmental assessments, and impacts of urbanization to wildlife populations for open space and urban planning. Prior to my entry into environmental consulting in 2004, I served as a research ecologist for the U.S. Geological Survey (Western Ecological Research Center, San Diego Field Station, Carlsbad Office), where my primary focus was on restoration ecology and developing protocols for monitoring aquatic and terrestrial wildlife populations in fragmented regions of southern California. I've also worked as a museum specialist and principal investigator for the Division of Vertebrate Zoology while at the Smithsonian Institution (Washington, D.C.).

During the last ten years of my career, I have had extensive working experience in the areas of wildlife biology, wetland and vernal pool creation, conservation and restoration ecology, hydrology, hydrogeology, open space planning, jurisdictional delineations, and regulatory permitting. I have a diverse background on working with environmental conservation groups, developers, and urban planners. I've also conducted seminars to instruct and train scientists/biologists employed by state and federal agencies. As a biologist and regulatory specialist, I have a strong background and working knowledge of regulatory issues such as Sections 404 and 401 of the Clean Water Act, Section 1602 Streambed Alteration Agreements, Endangered Species Act, and CEQA/NEPA compliances. My regulatory specialist experience includes training and certification in *Wetland Delineation with Emphasis on Hydric Soils* and *Arid West Supplement Wetland Delineation; Hydrogeological Site Characterization and Monitoring Well Construction; and Stormwater Pollution Prevention for Construction Sites.* In addition, I have working knowledge of the recently implemented EPA and Corps *Clean Water Act Jurisdiction Following Rapanos v. United States* and the northern, central and southern California counties Natural Community Conservation Plan (NCCP) & Habitat Conservation Plan (HCP), western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), and several other scientific, biological, and regulatory issues pertaining open space planning and the acquisition of regulatory permits.

My career experience expands working on CEQA/NEPA, Corps, USFWS, CDFG, USGS, city, county, and private sector projects. Your company and/or agency would gain an experienced consulting staff knowledgeable in addressing and resolving a variety of complex to standard environmental issues. I have a positive track record of professional and responsive coordination with city, county, state, and federal agencies and the private sector in providing technical studies, field research, scientific analysis and recommendations, regulatory permitting, and multi-tasking of projects.

Professional Experience

- Coordination and preparation of regulatory permit applications ranging from Sections 404/401 of the CWA, Section 1602 of CDFG, and CEQA compliant biological assessments. Conducted jurisdictional delineations and *Rapanos v United States* evaluations for preparation and submission to clients, responsible agencies, city municipalities, state and federal regulatory agencies.

- Conducted general and focused biological surveys and provided biological reports such as Biological Technical Reports, Resource Habitat Assessment, Determination of Biologically Equivalent or Superior Preservation (DBESP), and Conceptual Mitigation and Monitoring Plans (CMMP). Conducted field studies and project manager for the implementation of restoration conservation and creation of wetlands, vernal pools, and riparian habitats. Conducted and reviewed studies for aquatic resources to include pond and vernal pool design for amphibians, reptiles, and other wildlife species. Responsibilities included restoration ecology and development of resource management plans for public recreation and hiking, native wildlife species assemblage, eradication and control of nuisance and exotic plant and wildlife species to include, peer-reviewed scientific publications, technical reports, and field guide contributions.

- Coordinated numerous wetland and habitat enhancement-planning protocols with federal, state, and local agencies such as the United States Geological Service (USGS), United States Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), Maryland Game and Fish Department (MGFD), and non-government environmental groups.

- Supervised and managed restoration and habitat enhancement projects. The geographic areas of responsibility included California, Arizona, Nevada, Utah, Virginia, Washington DC, and Maryland.

- Supervised and trained federal, state, and other agencies natural resource staff of biologists, ecologists, and fisheries in fieldwork sampling and data collection.

- Preparation of environmental documents in the areas of biology, hydrology, and geology (EIR/EIS, scientific publications, popular magazines, technical reports, seminars, and presentations) to include project proposals and budgets.

- Research biologist/museum specialist and principal investigator at the Smithsonian Institution (National Museum of Natural History) Department of Vertebrate Zoology, Division of Mammalogy and Herpetology.

- Participated in numerous consultations and preparation of Biological Opinion pursuant to the Endangered Species Act and Section 7 Consultation.

- Adjunct Professor of Biology at the Rancho Santiago Community College District lecturing in molecular biology, cellular biology, human anatomy/physiology, and general biology.

Professional History

01/2009 – present	Touré Associates, Fresno, CA. Project Director
12/2007 – 01/2009:	Michael Brandman Associates, Fresno, CA. Project Manager/Regulatory Specialist.
07/2004 – 12/2007:	Glenn Lukos Associates, Inc. Lake Forest, CA. Biologist/Regulatory Specialist
01/2006 – Present:	Rancho Santiago Community College. Orange, CA. Adjunct Professor of Biology
08/2000 – 07/2004:	U.S. Geological Survey, Western Ecological Research Center, San Diego Field Station, Carlsbad Office, Research Ecologist
06/1993 – 08/2000:	Smithsonian Institution, National Museum of Natural History, Washington, D.C., Museum Specialist/Principal Investigator

Education

Master of Science (MS): Biology (Emphasis in Ecology). Howard University, Washington, D.C.

Bachelor of Science (BS): Zoology/Chemistry. Howard University, Washington D.C.

N/A. Zoology/Chemistry Long Beach State University (transfer to Howard Univ.)

Additional Training

- Stormwater Pollution Prevention for Construction Sites. Fresno Metropolitan Flood Control District, 2009.
- Applied Hydrogeological Site Characterization & Monitoring Well Construction. Northwest Environmental Training Center, 2009.
- Arid West Supplement Wetland Delineation. Wetland Training Institute, 2007.
- Wetland Delineation with Emphasis in Hydric Soils. Wetland Training Institute, 2005.
- Boat Navigation and Safety Training. U.S. Geological Survey, 2002.
- Helicopter and Aviation Safety Training. U.S. Geological Survey, 2001.
- Geographical Information Systems (GIS) and PC Arc/Info. Smithsonian Institution, 1994.

Professional Publications

Touré, T. *et al* 2005. Common Reptiles, pp. 82-87, *In* Schoenherr, A., D. Clarke, and E. Brown. 2005. Docent Guide to Orange County Wilderness, 142 pp.

Touré, T.A., 2004, Checklist of amphibians and reptiles of Arroyo Seco and Los Angeles River Basin: U.S. Geological Survey Fact Sheet prepared for Los Angeles River–Arroyo Seco Confluence Park Project.

Touré, T.A., Backlin, A.R., and Fisher, R.N., 2004, Eradication and control of the African clawed frog (Xenopus laevis) on Irvine Ranch Land Reserve, Orange County, California, 2003: U.S. Geological Survey Final Report prepared for Irvine Ranch Land Reserve, Irvine, Calif., 31 p.

Touré, T.A., and Fisher, R.N., 2003, Quarterly Report – African clawed frog, pond turtle and spadefoot toad project: U.S. Geological Survey Technical Report prepared for The Nature Conservancy.

Touré, T. A. and G. A. Middendorf. 2002. Colonization of herpetofauna to a created wetland. Bulletin of the Maryland Herpetological Society 38(4): 99-117.

Touré, T. A. 2001. A report on the population status and conservation of Rosy boa (*Charina trivirgata*): A two-year study in Anza Borrego State Park and Joshua Tree National Monument, 19 pp.

Touré, T.A., and Fisher, R.N., 2001, Monitoring program for amphibians and reptiles in the Nature Reserve of Orange County, Summary Report 2001: U.S. Geological Survey Technical Report prepared for Nature Reserve of Orange County, Calif.

Touré, T. A. 1999. Herpetofauna of a constructed wetland and adjacent forest. Howard University, Washington DC. 20 tbs., 7 figs., 63 pp. [Also catalogued at the Smithsonian, U.S Natural History Museum, Washington, D.C.]

McDiarmid, R. W., J. C. Campbell, and T. A. Touré. 1999. Snake Species of the World Catalogue. A Geographical and Taxonomic Reference. Volume 1. The Herpetologist' League. Washington, DC. 511 pp.

McDiarmid, R. W., J. S. Savage, and T. A. Touré. 1997. The proper name of the tropical tree boa (*Hortulanus corallus*). J. Herpetology 30(3): 320-326.

Touré, T. A. 1995. Snakes: Suborder Serpentes, pp. 204-261, *In* Frank, N. and E. Ramus. 1995. A complete guide to scientific and common names of reptiles and amphibians of the world, 377 pp.

Professional Presentations

2007. Wetland and aquatic habitats of Orange County. [Education Series: Donna O'Neill Land Conservancy]
2006. Aquatic and riparian restoration ecology. [Seminar: Orange County Natural History Museum/Acorn Naturalist Center]
2004. Floral and faunal species conservation and management [Seminar: Santa Ana Park Naturalist Program, Department of Parks and Recreation]
2004. Spadefoot toad habitat enhancement training [Education Series: Laguna Coast Wilderness Park]
2003. Amphibian management: Concerns and opportunities. [Seminar: Nature Reserve of Orange County]
2003. Vernal pool ecology and spadefoot toads (*Spae hammondii*) of Orange County. [Seminar: Orange County Natural History Museum/Acorn Naturalist Center]
2003. Long-term monitoring of fragmented habitats in coastal southern California. [George Wright Society and ASIH, annual meeting]
2003. Exotic amphibians, current status and possible impacts. [Western Division of the American Fisheries Society, annual meeting]
2002. What's a herp? [Education Lecture Series: The Nature Conservancy of Orange County]
2001. Vertebrate abundance and diversity in fragmented habitats of coastal southern California. [Society for Conservation Biology, annual meeting]
2000. Constructed wetland and its ability to sustain amphibian and reptile populations. [Society of Wetland Scientists, annual meeting]
2000. Herpetofauna of a constructed wetland and adjacent forest. [ASIH, annual meeting]
2000. Reptiles and amphibians of the Sands Road Wetland Sanctuary. [ASIH, annual meeting]
1996. Snake species of the world: A taxonomic view. [ASIH, annual meeting]

Professional Affiliations

Association of Environmental Professionals
American Society of Ichthyologists and Herpetologists
Herpetologist League
Partners in Amphibian and Reptile Conservation
Declining Amphibian Task Force
Society of Conservation Biology
Society of Wetland Scientist
Southern California Wetland Recovery Project

Awards

2000. U.S. Geological Survey, Scientific Achievement Award, Patuxent Wildlife Research Center, Maryland
1999. Smithsonian Institution Libraries, Distinguished Subject Award
1998. Graduate Symposium Award, Howard University
1990. Smithsonian Tropical Research Institution, Research Internship Award, Republic of Panama

Professional Job References

Robert Francisco, Michael Brandman Associates, Vice-President (619) 764-9934
Tony Bomkamp, Glenn Lukos Associates, Senior Regulatory Specialist (949) 837-0404
Trish Smith, The Nature Conservancy, Senior Project Ecologist (714) 955-2810
Dr. Robert Fisher, USGS San Diego Field Station, Research Zoologist (619) 225-6436
Dr. Roy McDiarmid, Smithsonian Institution Museum of Natural History (202) 357-2778

Attachment D

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

3110 Main Street, Suite 205
Santa Monica, California 90405
Fax: (949) 717-0069

Matt Hagemann
Tel: (949) 887-9013
Email: mhagemann@swape.com

May 18, 2010

Robyn C. Purchia
Adams Broadwell Joseph & Cardozo
520 Capitol Mall, Suite 350
Sacramento, CA 95814

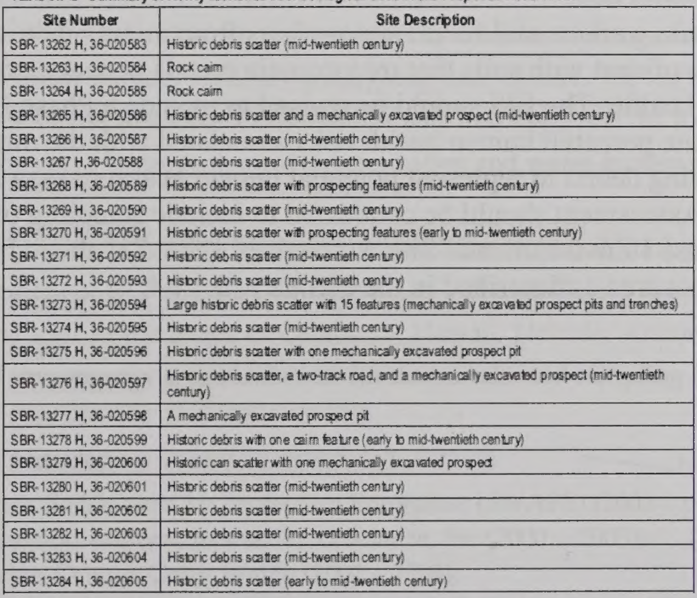
Subject: **Comments on the Chevron Energy Solutions Lucerne Valley Solar Project Environmental Impact Statement**

Dear Ms. Purchia:

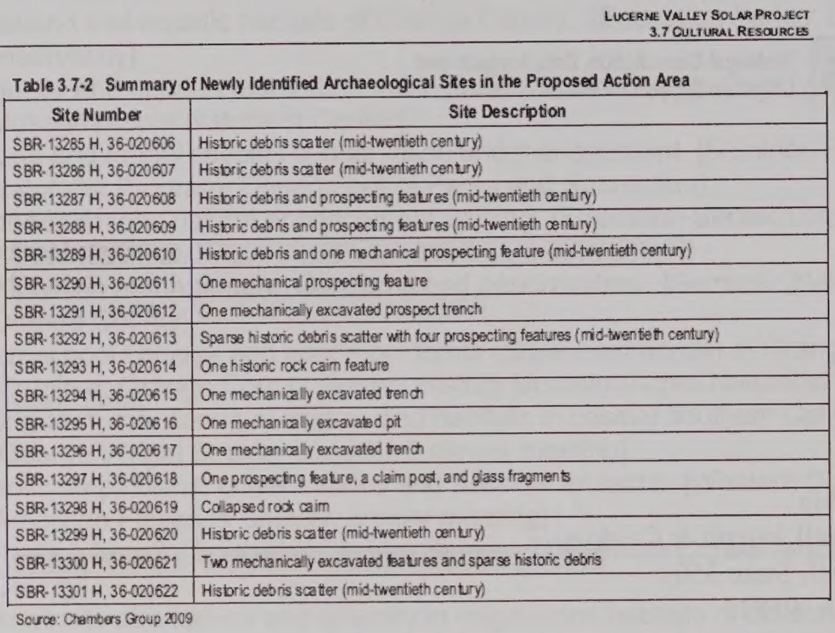
I have reviewed the January 2010 Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project (EIS) for possible impacts associated with surface mining at the project site.

The EIS describes a number of prospect pits within the project area (p. 3.7-9):

Table 3.7-2 Summary of Newly Identified Archaeological Sites in the Proposed Action Area



Site Number	Site Description
SBR-13262 H, 36-020583	Historic debris scatter (mid-twentieth century)
SBR-13263 H, 36-020584	Rock cairn
SBR-13264 H, 36-020585	Rock cairn
SBR-13265 H, 36-020586	Historic debris scatter and a mechanically excavated prospect (mid-twentieth century)
SBR-13266 H, 36-020587	Historic debris scatter (mid-twentieth century)
SBR-13267 H,36-020588	Historic debris scatter (mid-twentieth century)
SBR-13268 H, 36-020589	Historic debris scatter with prospecting features (mid-twentieth century)
SBR-13269 H, 36-020590	Historic debris scatter (mid-twentieth century)
SBR-13270 H, 36-020591	Historic debris scatter with prospecting features (early to mid-twentieth century)
SBR-13271 H, 36-020592	Historic debris scatter (mid-twentieth century)
SBR-13272 H, 36-020593	Historic debris scatter (mid-twentieth century)
SBR-13273 H, 36-020594	Large historic debris scatter with 15 features (mechanically excavated prospect pits and trenches)
SBR-13274 H, 36-020595	Historic debris scatter (mid-twentieth century)
SBR-13275 H, 36-020596	Historic debris scatter with one mechanically excavated prospect pit
SBR-13276 H, 36-020597	Historic debris scatter, a two-track road, and a mechanically excavated prospect (mid-twentieth century)
SBR-13277 H, 36-020598	A mechanically excavated prospect pit
SBR-13278 H, 36-020599	Historic debris with one cairn feature (early to mid-twentieth century)
SBR-13279 H, 36-020600	Historic can scatter with one mechanically excavated prospect
SBR-13280 H, 36-020601	Historic debris scatter (mid-twentieth century)
SBR-13281 H, 36-020602	Historic debris scatter (mid-twentieth century)
SBR-13282 H, 36-020603	Historic debris scatter (mid-twentieth century)
SBR-13283 H, 36-020604	Historic debris scatter (mid-twentieth century)
SBR-13284 H, 36-020605	Historic debris scatter (early to mid-twentieth century)



LUCERNE VALLEY SOLAR PROJECT
3.7 CULTURAL RESOURCES

Table 3.7-2 Summary of Newly Identified Archaeological Sites in the Proposed Action Area

Site Number	Site Description
SBR-13285 H, 36-020606	Historic debris scatter (mid-twentieth century)
SBR-13286 H, 36-020607	Historic debris scatter (mid-twentieth century)
SBR-13287 H, 36-020608	Historic debris and prospecting features (mid-twentieth century)
SBR-13288 H, 36-020609	Historic debris and prospecting features (mid-twentieth century)
SBR-13289 H, 36-020610	Historic debris and one mechanical prospecting feature (mid-twentieth century)
SBR-13290 H, 36-020611	One mechanical prospecting feature
SBR-13291 H, 36-020612	One mechanically excavated prospect trench
SBR-13292 H, 36-020613	Sparse historic debris scatter with four prospecting features (mid-twentieth century)
SBR-13293 H, 36-020614	One historic rock cairn feature
SBR-13294 H, 36-020615	One mechanically excavated trench
SBR-13295 H, 36-020616	One mechanically excavated pit
SBR-13296 H, 36-020617	One mechanically excavated trench
SBR-13297 H, 36-020618	One prospecting feature, a claim post, and glass fragments
SBR-13298 H, 36-020619	Collapsed rock cairn
SBR-13299 H, 36-020620	Historic debris scatter (mid-twentieth century)
SBR-13300 H, 36-020621	Two mechanically excavated features and sparse historic debris
SBR-13301 H, 36-020622	Historic debris scatter (mid-twentieth century)

Source: Chambers Group 2009

The table shows 12 features associated with prospecting. Mechanical prospecting is associated with nine of the features identified in the table. However, other than to consider the cultural resources of the mining debris, the EIS only briefly discusses the mining related debris, stating (p. 3.5-4):

> sediment berms appear to be remnants of historic hand-dug mining activity.

Despite the identification of the 12 prospecting features the EIS did not evaluate the potential health risks associated with the mining activities. The EIS only considered the mining debris to be hand-dug which is at odds with the findings of the cultural resources survey as tabulated above.

Hazards to construction workers and future site workers from mining debris include dermal contact and ingestion of dust with soils that may contain metals at concentrations that are hazardous to human health. The EIS should be revised to include a Phase I Environmental Site Assessment to evaluate potential human health risks associated with the mining debris. If the Phase I finds the mining debris to represent potential human health risks, a Phase II Environmental Site Assessment should be conducted to include sampling of the mining debris. Additionally, the Phase I Environmental Site Assessment should evaluate illegal dumping activities in the project area as described in the EIS on p. 3.14-4.

Sincerely,

Matt Hagemann, P.G.

Attachment D - Resume Hagemann

SWAPE Technical Consultation, Data Analysis and Litigation Support for the Environment

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Email: mhagemann@swape.com

Matthew F. Hagemann

Geologic and Hydrogeologic Characterization
Investigation and Remediation Strategies
Regulatory Compliance
CEQA Review
Expert Witness

Education:

M.S. Degree, Geology, California State University Los Angeles, Los Angeles, CA, 1984.

B.A. Degree, Geology, Humboldt State University, Arcata, CA, 1982.

Professional Certification:

California Professional Geologist, License Number 8571.

Professional Experience:

Matt has 25 years of experience in environmental policy, assessment and remediation. He spent nine years with the U.S. EPA in the RCRA and Superfund programs and served as EPA's Senior Science Policy Advisor in the Western Regional Office where he identified emerging threats to groundwater from perchlorate and MTBE. While with EPA, Matt also served as a Senior Hydrogeologist in the oversight of the assessment of seven major military facilities undergoing base closure. He led numerous enforcement actions under provisions of the Resource Conservation and Recovery Act (RCRA) while also working with permit holders to improve hydrogeologic characterization and water quality monitoring.

Matt has worked closely with U.S. EPA legal counsel and the technical staff of several states in the application and enforcement of RCRA, Safe Drinking Water Act and Clean Water Act regulations. Matt has trained the technical staff in the States of California, Hawaii, Nevada, Arizona and the Territory of Guam in the conduct of investigations, groundwater fundamentals, and sampling techniques.

Positions Matt has held include:

- Founding Partner, Soil/Water/Air Protection Enterprise (SWAPE) (2003 – present);
- Senior Environmental Analyst, Komex H2O Science, Inc (2000 -- 2003);
- Executive Director, Orange Coast Watch (2001 – 2004);
- Senior Science Policy Advisor and Hydrogeologist, U.S. Environmental Protection Agency (1989–1998);
- Hydrogeologist, National Park Service, Water Resources Division (1998 – 2000);

- Adjunct Faculty Member, San Francisco State University, Department of Geosciences (1993 – 1998);
- Instructor, College of Marin, Department of Science (1990 – 1995);
- Geologist, U.S. Forest Service (1986 – 1998); and
- Geologist, Dames & Moore (1984 – 1986).

Senior Regulatory and Litigation Support Analyst:

With SWAPE, Matt's responsibilities have included:

- Manager of a project to evaluate numerous formerly used military sites in the western U.S.
- Lead analyst in the review of numerous environmental impact reports under CEQA that identify significant issues with regard to hazardous waste, water resources, water quality, air quality, greenhouse gas emissions and geologic hazards.
- Lead analyst in the review of environmetal issues in applications before the California Energy Commission.
- Technical assistance and litigation support for TCE vapor intrusion concerns.
- Manager of a comprehensive evaluation of potential sources of perchlorate contamination in Southern California drinking water wells.
- Manager and designated expert for litigation support under provisions of Proposition 65 in the review of releases of gasoline to sources drinking water at major refineries and hundreds of gas stations throughout California.
- Expert witness on MTBE litigation.
- Expert witness and litigation support on the impact of air toxins and hazards at a school.

With Komex H2O Science Inc., Matt's duties included the following:

- Senior author of a report on the extent of perchlorate contamination that was used in testimony by the former U.S. EPA Administrator and General Counsel.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of MTBE use, research, and regulation.
- Senior researcher in the development of a comprehensive, electronically interactive chronology of perchlorate use, research, and regulation.
- Senior researcher in a study that estimates nationwide costs for MTBE remediation and drinking water treatment, results of which were published in newspapers nationwide and in testimony against provisions of an energy bill that would limit liability for oil companies.
- Research to support litigation to restore drinking water supplies that have been contaminated by MTBE in California and New York.
- Expert witness testimony in a case of oil production-related contamination in Mississippi.
- Lead author for a multi-volume remedial investigation report for an operating school in Los Angeles that met strict regulatory requirements and rigorous deadlines.
- Development of strategic approaches for cleanup of contaminated sites in consultation with clients and regulators.

Executive Director:

As Executive Director with Orange Coast Watch, Matt led efforts to restore water quality at Orange County beaches from multiple sources of contamination including urban runoff and the discharge of wastewater. In reporting to a Board of Directors that included representatives from leading Orange County universities and businesses, Matt prepared issue papers in the areas of treatment and disinfection of wastewater and control of the dischrge of grease to sewer systems. Matt actively participated in the development of countywide water quality permits for the control of urban runoff and permits for the discharge of wastewater. Matt worked with other nonprofits to protect and restore water quality, including Surfrider, Natural Resources Defense Council and Orange County CoastKeeper as well as with business institutions including the Orange County Business Council.

Hydrogeology:

As a Senior Hydrogeologist with the U.S. Environmental Protection Agency, Matt led investigations to characterize and cleanup closing military bases, including Mare Island Naval Shipyard, Hunters Point Naval Shipyard, Treasure Island Naval Station, Alameda Naval Station, Moffett Field, Mather Army Airfield, and Sacramento Army Depot. Specific activities were as follows:

- Led efforts to model groundwater flow and contaminant transport, ensured adequacy of monitoring networks, and assessed cleanup alternatives for contaminated sediment, soil, and groundwater.
- Initiated a regional program for evaluation of groundwater sampling practices and laboratory analysis at military bases.
- Identified emerging issues, wrote technical guidance, and assisted in policy and regulation development through work on four national U.S. EPA workgroups, including the Superfund Groundwater Technical Forum and the Federal Facilities Forum.

At the request of the State of Hawaii, Matt developed a methodology to determine the vulnerability of groundwater to contamination on the islands of Maui and Oahu. He used analytical models and a GIS to show zones of vulnerability, and the results were adopted and published by the State of Hawaii and County of Maui.

As a hydrogeologist with the EPA Groundwater Protection Section, Matt worked with provisions of the Safe Drinking Water Act and NEPA to prevent drinking water contamination. Specific activities included the following:

- Received an EPA Bronze Medal for his contribution to the development of national guidance for the protection of drinking water.
- Managed the Sole Source Aquifer Program and protected the drinking water of two communities through designation under the Safe Drinking Water Act. He prepared geologic reports, conducted public hearings, and responded to public comments from residents who were very concerned about the impact of designation.
- Reviewed a number of Environmental Impact Statements for planned major developments, including large hazardous and solid waste disposal facilities, mine reclamation, and water transfer.

Matt served as a hydrogeologist with the RCRA Hazardous Waste program. Duties were as follows:

- Supervised the hydrogeologic investigation of hazardous waste sites to determine compliance with Subtitle C requirements.
- Reviewed and wrote "part B" permits for the disposal of hazardous waste.

- Conducted RCRA Corrective Action investigations of waste sites and led inspections that formed the basis for significant enforcement actions that were developed in close coordination with U.S. EPA legal counsel.
- Wrote contract specifications and supervised contractor's investigations of waste sites.

With the National Park Service, Matt directed service-wide investigations of contaminant sources to prevent degradation of water quality, including the following tasks:

- Applied pertinent laws and regulations including CERCLA, RCRA, NEPA, NRDA, and the Clean Water Act to control military, mining, and landfill contaminants.
- Conducted watershed-scale investigations of contaminants at parks, including Yellowstone and Olympic National Park.
- Identified high-levels of perchlorate in soil adjacent to a national park in New Mexico and advised park superintendent on appropriate response actions under CERCLA.
- Served as a Park Service representative on the Interagency Perchlorate Steering Committee, a national workgroup.
- Developed a program to conduct environmental compliance audits of all National Parks while serving on a national workgroup.
- Co-authored two papers on the potential for water contamination from the operation of personal watercraft and snowmobiles, these papers serving as the basis for the development of nation-wide policy on the use of these vehicles in National Parks.
- Contributed to the Federal Multi-Agency Source Water Agreement under the Clean Water Action Plan.

Policy:

Served senior management as the Senior Science Policy Advisor with the U.S. Environmental Protection Agency, Region 9. Activities included the following:

- Advised the Regional Administrator and senior management on emerging issues such as the potential for the gasoline additive MTBE and ammonium perchlorate to contaminate drinking water supplies.
- Shaped EPA's national response to these threats by serving on workgroups and by contributing to guidance, including the Office of Research and Development publication, Oxygenates in Water: Critical Information and Research Needs.
- Improved the technical training of EPA's scientific and engineering staff.
- Earned an EPA Bronze Medal for representing the region's 300 scientists and engineers in negotiations with the Administrator and senior management to better integrate scientific principles into the policy-making process.
- Established national protocol for the peer review of scientific documents.

Geology:

With the U.S. Forest Service, Matt led investigations to determine hillslope stability of areas proposed for timber harvest in the central Oregon Coast Range. Specific activities were as follows:

- Mapped geology in the field, and used aerial photographic interpretation and mathematical models to determine slope stability.
- Coordinated his research with community members who were concerned with natural resource protection.

- Characterized the geology of an aquifer that serves as the sole source of drinking water for the city of Medford, Oregon.

As a consultant with Dames and Moore, Matt led geologic investigations of two contaminated sites (later listed on the Superfund NPL) in the Portland, Oregon, area and a large hazardous waste site in eastern Oregon. Duties included the following:

- Supervised year-long effort for soil and groundwater sampling.
- Conducted aquifer tests.
- Investigated active faults beneath sites proposed for hazardous waste disposal.

Teaching:

From 1990 to 1998, Matt taught at least one course per semester at the community college and university levels:

- At San Francisco State University, held an adjunct faculty position and taught courses in environmental geology, oceanography (lab and lecture), hydrogeology, and groundwater contamination.
- Served as a committee member for graduate and undergraduate students.
- Taught courses in environmental geology and oceanography at the College of Marin.

Invited Testimony, Reports, Papers and Presentations:

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Presentation to the Public Environmental Law Conference, Eugene, Oregon.

Hagemann, M.F., 2008. Disclosure of Hazardous Waste Issues under CEQA. Invited presentation to U.S. EPA Region 9, San Francisco, California.

Hagemann, M.F., 2005. Use of Electronic Databases in Environmental Regulation, Policy Making and Public Participation. Brownfields 2005, Denver, Coloradao.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Nevada and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Las Vegas, NV (served on conference organizing committee).

Hagemann, M.F., 2004. Invited testimony to a California Senate committee hearing on air toxins at schools in Southern California, Los Angeles.

Brown, A., Farrow, J., Gray, A. and **Hagemann, M.,** 2004. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to the Ground Water and Environmental Law Conference, National Groundwater Association.

Hagemann, M.F., 2004. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in Arizona and the Southwestern U.S. Presentation to a meeting of the American Groundwater Trust, Phoenix, AZ (served on conference organizing committee).

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River and Impacts to Drinking Water in the Southwestern U.S. Invited presentation to a special committee meeting of the National Academy of Sciences, Irvine, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a tribal EPA meeting, Pechanga, CA.

Hagemann, M.F., 2003. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal repesentatives, Parker, AZ.

Hagemann, M.F., 2003. Impact of Perchlorate on the Colorado River and Associated Drinking Water Supplies. Invited presentation to the Inter-Tribal Meeting, Torres Martinez Tribe.

Hagemann, M.F., 2003. The Emergence of Perchlorate as a Widespread Drinking Water Contaminant. Invited presentation to the U.S. EPA Region 9.

Hagemann, M.F., 2003. A Deductive Approach to the Assessment of Perchlorate Contamination. Invited presentation to the California Assembly Natural Resources Committee.

Hagemann, M.F., 2003. Perchlorate: A Cold War Legacy in Drinking Water. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. From Tank to Tap: A Chronology of MTBE in Groundwater. Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. A Chronology of MTBE in Groundwater and an Estimate of Costs to Address Impacts to Groundwater. Presentation to the annual meeting of the Society of Environmental Journalists.

Hagemann, M.F., 2002. An Estimate of the Cost to Address MTBE Contamination in Groundwater (and Who Will Pay). Presentation to a meeting of the National Groundwater Association.

Hagemann, M.F., 2002. An Estimate of Costs to Address MTBE Releases from Underground Storage Tanks and the Resulting Impact to Drinking Water Wells. Presentation to a meeting of the U.S. EPA and State Underground Storage Tank Program managers.

Hagemann, M.F., 2001. From Tank to Tap: A Chronology of MTBE in Groundwater. Unpublished report.

Hagemann, M.F., 2001. Estimated Cleanup Cost for MTBE in Groundwater Used as Drinking Water. Unpublished report.

Hagemann, M.F., 2001. Estimated Costs to Address MTBE Releases from Leaking Underground Storage Tanks. Unpublished report.

Hagemann, M.F., and VanMouwerik, M., 1999. Potential Water Quality Concerns Related to Snowmobile Usage. Water Resources Division, National Park Service, Technical Report.

VanMouwerik, M. and **Hagemann, M.F**. 1999, Water Quality Concerns Related to Personal Watercraft Usage. Water Resources Division, National Park Service, Technical Report.

Hagemann, M.F., 1999, Is Dilution the Solution to Pollution in National Parks? The George Wright Society Biannual Meeting, Asheville, North Carolina.

Hagemann, M.F., 1997, The Potential for MTBE to Contaminate Groundwater. U.S. EPA Superfund Groundwater Technical Forum Annual Meeting, Las Vegas, Nevada.

Hagemann, M.F., and Gill, M., 1996, Impediments to Intrinsic Remediation, Moffett Field Naval Air Station, Conference on Intrinsic Remediation of Chlorinated Hydrocarbons, Salt Lake City.

Hagemann, M.F., Fukunaga, G.L., 1996, The Vulnerability of Groundwater to Anthropogenic Contaminants on the Island of Maui, Hawaii. Hawaii Water Works Association Annual Meeting, Maui, October 1996.

Hagemann, M. F., Fukanaga, G. L., 1996, Ranking Groundwater Vulnerability in Central Oahu, Hawaii. Proceedings, Geographic Information Systems in Environmental Resources Management, Air and Waste Management Association Publication VIP-61.

Hagemann, M.F., 1994. Groundwater Characterization and Cleanup at Closing Military Bases in California. Proceedings, California Groundwater Resources Association Meeting.

Hagemann, M.F. and Sabol, M.A., 1993. Role of the U.S. EPA in the High Plains States Groundwater Recharge Demonstration Program. Proceedings, Sixth Biennial Symposium on the Artificial Recharge of Groundwater.

Hagemann, M.F., 1993. U.S. EPA Policy on the Technical Impracticability of the Cleanup of DNAPL-contaminated Groundwater. California Groundwater Resources Association Meeting.

Hagemann, M.F., 1992. Dense Nonaqueous Phase Liquid Contamination of Groundwater: An Ounce of Prevention... Proceedings, Association of Engineering Geologists Annual Meeting, v. 35.

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Some Observations on Photovoltaic Cell Panels

by Oliver Seely

Attachment E- Observation on Photovoltaic Cell Panels

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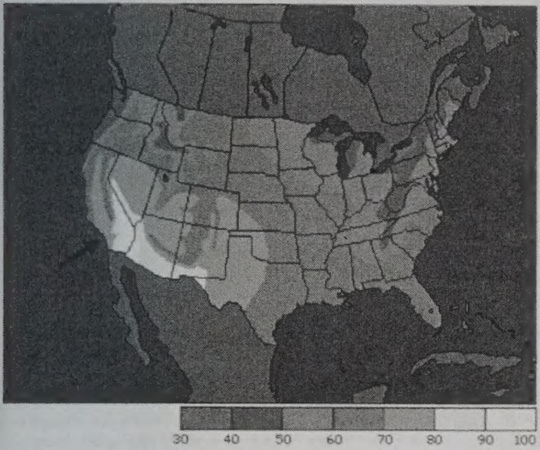
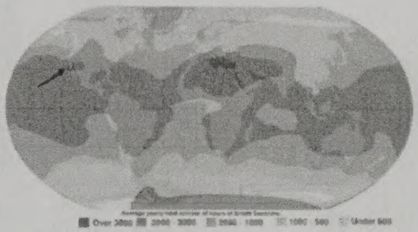
Revised May 6, 2010

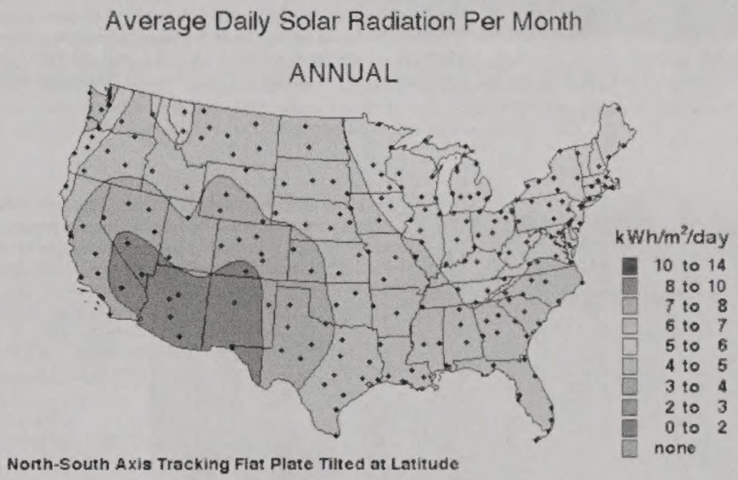
Introduction

For many years I've taught a course on science and technology from a historical perspective. The voracious appetite for energy by advanced societies and particularly the United States figures prominently in the course. I comment each semester that when humans are forced finally to stop using fossil fuels, either because of increasing costs or global pollution, there will still be plenty of energy from the sun, particularly in regions lucky enough to have cloudless days most of the year. One day my wife said to me, "Why don't you put your money where your mouth is?" So I did.



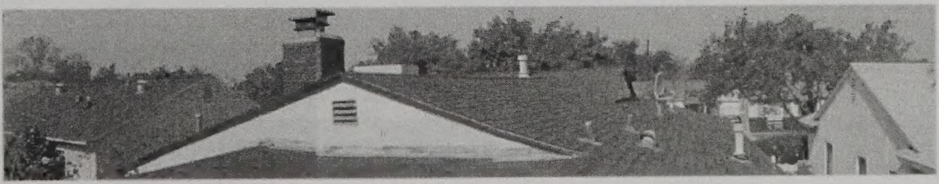
The decision to install photovoltaic cell panels hinges on where one lives. The amount of sunlight as determined by the climate of one's location and the ability to receive the direct rays of the sun when it is shining helps one to decide if it makes sense to install the panels. On the left and right are images showing available sunlight for the United States and the world respectively. Although our location appears to be ideal because of the available sunlight per year, in actual fact our distance from the Pacific Ocean is only 12 km and coastal fog is a problem part of the year. On the average, the amount of sunlight we get is limited to between 5 and 8 hours per day throughout the year (see the blue strip along the coast in the left image in front of the arrow tip).



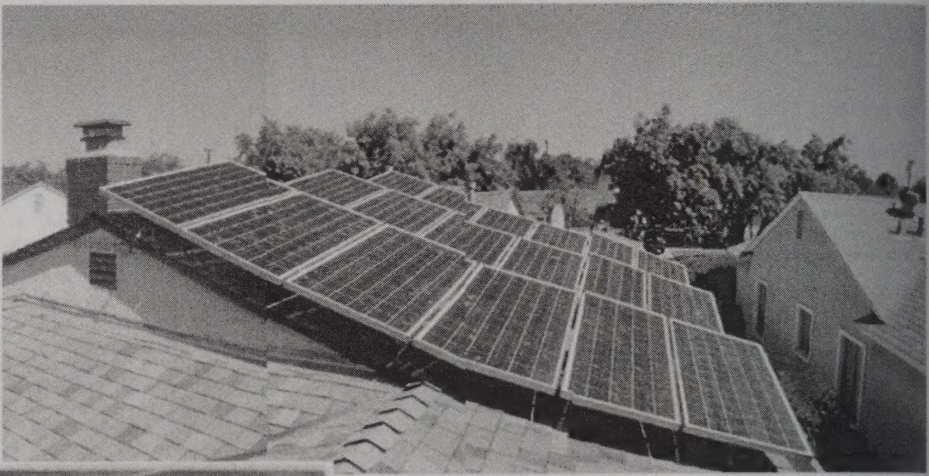

Average Daily Solar Radiation Per Month
ANNUAL
kWh/m²/day
10 to 14
8 to 10
7 to 8
6 to 7
5 to 6
4 to 5
3 to 4
2 to 3
0 to 2
none
North-South Axis Tracking Flat Plate Tilted at Latitude

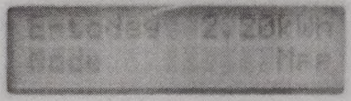
Hei is anc ima of the con Un Sta wit a leg inc uni of kilc hou per squ me per day

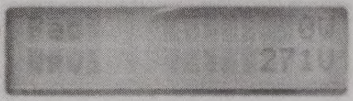
A roof sloping toward the south in full view of the sky would be ideal. However, our roof line slopes toward the east and the west. There is a chimney near the peak, as you can see.



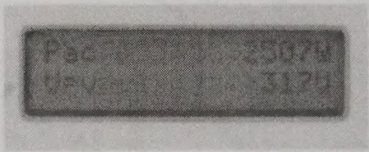
The panels have to be installed where there are no shadows during the day, so we installed our 2.5 kilowatt system on the east-sloping roof with an additional tilt toward the south. There are actually 18 panels each rated at 165 watts which brings the system to a theoretical maximum power output of 2970 watts or 2.97 kilowatts. The rating of 2.5 kilowatts may be due to the installing company knowing that the tilt of our panels would be less than ideal. Maximum output occurs around 11 am each day that the sun shines.







energy
output per day during the summer is 14 kilowatt hours. A REALLY good day brings 15 and there have been a few exceptional days which brought in 16 kw hours. Cloudless winter days yield around 7.5 kw hours. Rain is something else again. Here is what it looked like on 28 December, 2004 all day. And with more than a little rain. Still, 2.20 kWh wasn't all that bad. There was a day two weeks earlier that achieved only a little more than 0.5 kWh. Note the AC power meter. There may be 271 volts being produced but there isn't enough light to offer even one watt of power.



On some partially cloudy days during the early spring a curious observation can be made as the sun periodically peeks through the clouds. Here are two images on April 22, 2006. Except for the occasional gaps in the clouds, this was NOT a typical sunny day in southern California. But take a look at the meter: 2507 Watts! Is it favorable atmospheric conditions which allow a large amount of UV light to arrive at the panels or is it the added illumination of reflected light from the clouds which increases the power output to an "as advertised" level?

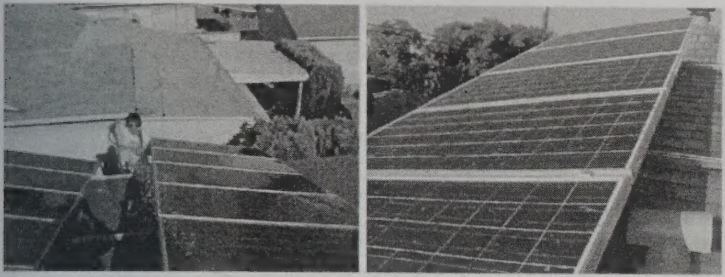
Structural modifications of any kind carry the risk of unintended consequences. Our installation caused a leak through the bathroom vent during heavy rain as a result of runoff onto the roof and subsequent splashing into the vent. The vent was modified by adding a shield, as shown. Ugly though it may be, it did the trick as demonstrated by another rainstorm shortly after its installation.

Each morning the controller goes through its countdown, synchronizing the inverter phase with that of the grid. When it locks into the phase of the grid the system goes online and electricity begins to flow from the panels. We estimate that it will take 14 years to recoup our out of pocket expenses. Richard Corkish of the Photovoltaics Special Research Centre at the University of New South Wales estimates that it will take between 3 and 7 years to produce enough energy to equal that amount contained in the non-renewable fossil fuels used to fabricate the panels in the first place. That estimate can be found in his offering, Can Solar Cells Ever Recapture the Energy Invested in their Manufacture?

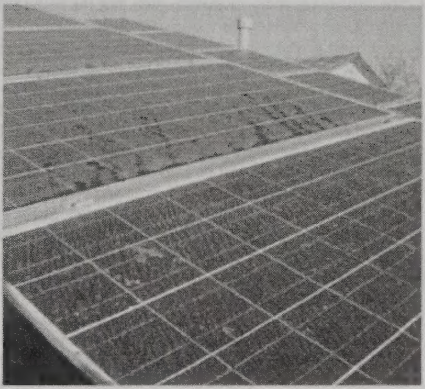
Panel Maintenance

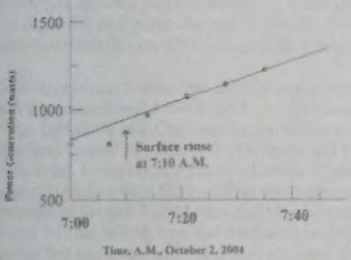
The panels are guaranteed for 25 years. The good news is that the panels work silently with no moving parts, pumping excess electrical energy routinely into the electrical grid when we use less than that which is generated. At those times the meter turns backward.

The bad news is that over time in an urban area where there is a lot of dustfall, the efficiency drops. In the Los Angeles area several months can go by without rain. These images show what happens after such a period. We have found it advisable to do a once-a-month rinsing of the panels to make them sparkling clean and to bring them back to maximum efficiency.



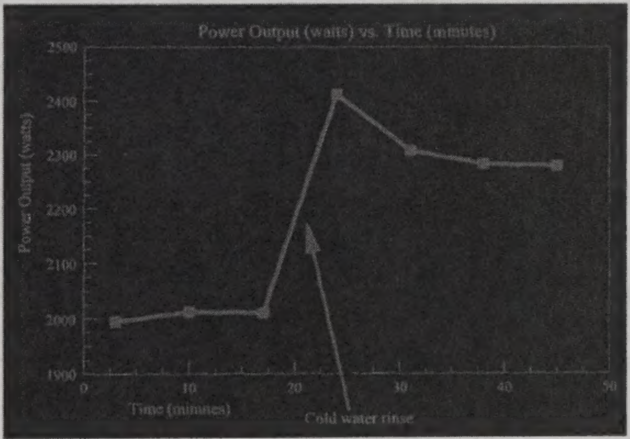
Here's an image taken of the panels after two months without rain. My guess is that the drop in power output was somewhere around 10%.





The first point in the graph on the left shows the output from panels which had been allowed to collect dust for a month. After rinsing the panels, the output was monitored in 7 minute increments following the first measurement. The "best fit" line crosses the time of the first measurement at an output of 905 watts. The measured output of the dirty panels at that time was 811 watts or around 10% less than that which might have been generated at that time by clean panels.

Here's another one a bit more dramatic. The minutes from 3 to 45 were minutes following 10am, August 5, 2005. It was a cloudless and hot summer morning. There had been no rain for two months. Readings were taken every seven minutes. The first three readings were taken, the panels were then given a cold water rinse and four additional readings were taken. Note the large increase in output for the fourth reading and the subsequent drop-off. I assume that the larger reading is characteristic of the colder operating temperature immediately after the cold water rinse. There appears to be a 15% increase after the rinse.



Recently a visitor to this page complained that my claim of a significant increase in power output after rinsing was not convincing. Here is a third set of data which may be copied and used in any manner you wish.

The data were taken starting at 9:12 am on a cloudless midsummer morning, 2006. The cold water rinse was effected between readings taken at 9:26 and 9:33. The previous rinse had been done about a month before this one. There had been no rain between rinses.

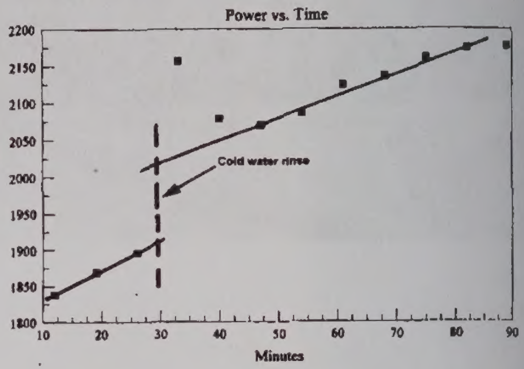
Time	Power output (watts)
9:12	1838
9:19	1869
9:26	1896
cold water rinse	xxxx
9:33	2157

9:40	2079
9:47	2070
9:54	2086
10:01	2124
10:08	2136
10:15	2160
10:22	2174
10:29	2177

Here is my graphical spin on the data. I would venture that there was a 5% increase in power output after the rinse.

How much water?

I was asked recently about water needs for panels installed in some of the desert regions of California. The frequency of rinsing depends on the dustfall of the region, so any projection of needs requires a measurement of dustfall and a comparison with areas for which the dustfall and accompanying energy loss is known, but the rinsing frequency is a judgment call based on that energy loss which one is willing to tolerate. My once-per-month rinsing during the dry season in suburban Los Angeles seems to coincide with an energy loss of 5-10%. The "case study" rinsing frequency (below) seems to be based on an energy loss of 15% to trigger a rinse. A typical rinse of my 18 panels using the method shown in the photo above requires 1.21 cu. ft. of water. The rinse consists of a first pass "to soften up" the layer of dust and bird droppings followed by a second pass to remove the softened residue. 1.21 cu. ft. = 9.05 gallons (U.S.. liq.) = 34.3 liters. A careful measurement of volume needed and the noble expectation that one will be able to claim that the runoff will go into one's garden is shattered when one observes the runoff lying in the rain gutter behind a pile of leaves and evaporating slowly. I leave it to the reader to make the calculations needed for his or her application. Suffice it to say that my method is just about the most inefficient one could use. An industrial operation would have an advantage of scale and recycling potential.

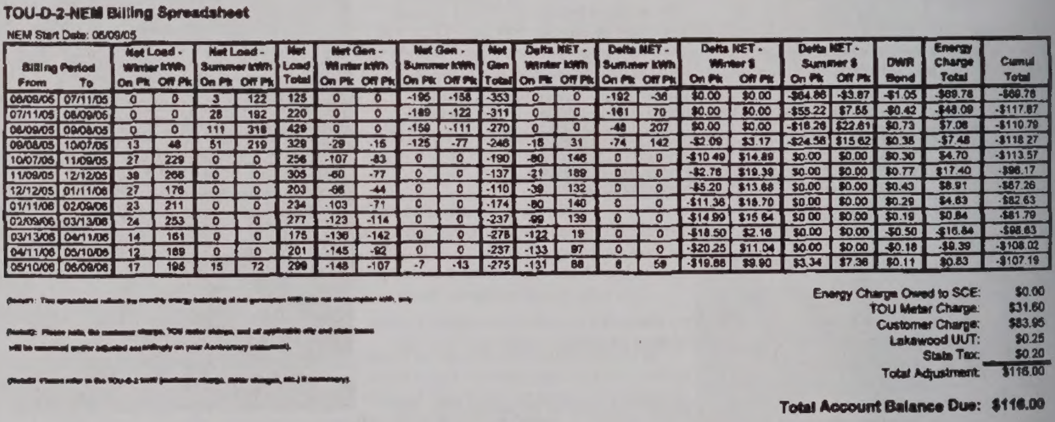


Rate Games

When our system was first installed we were billed at a flat rate per kilowatt hour. The meter routinely turned backward during the day. We have since switched to "time of use" or TOU metering. For the first two years of TOU billing, instead of a bill each month at the fixed rate, we received a spread sheet, the bottom line for which didn't have to be paid but once each year. The first year the electric company put us on the TOU-D-2 schedule (the one for big users). TOU metering uses four different rates. Those which are established for the TOU-D-2 schedule are:

Period	Cost per kwh ($ U.S.)
Winter On Peak	0.15
Winter Off Peak	0.11
Summer On Peak	0.335
Summer Off Peak	0.1075

The spread sheet for 06/09/05 to 06/09/06 looked like this:



TOU-D-2-NEM Billing Spreadsheet

NEM Start Date: 06/09/05

Billing Period		Net Load - Winter kWh		Net Load - Summer kWh		Net Load	Net Gen - Winter kWh		Net Gen - Summer kWh		Net Gen	Delta NET - Winter kWh		Delta NET - Summer kWh		Delta NET - Winter $		Delta NET - Summer $		DWR	Energy Charge	Cumul
From	To	On Pk	Off Pk	On Pk	Off Pk	Total	On Pk	Off Pk	On Pk	Off Pk	Total	On Pk	Off Pk	On Pk	Off Pk	On Pk	Off Pk	On Pk	Off Pk	Bond	Total	Total
06/09/05	07/11/05	0	0	3	122	125	0	0	-196	-158	-353	0	0	-192	-36	$0.00	$0.00	-$64.86	-$3.87	-$1.05	-$69.78	-$69.78
07/11/05	08/09/05	0	0	28	192	220	0	0	-189	-122	-311	0	0	-161	70	$0.00	$0.00	-$55.22	$7.55	-$0.42	-$48.09	-$117.87
08/09/05	09/08/05	0	0	111	318	429	0	0	-159	-111	-270	0	0	-48	207	$0.00	$0.00	-$16.26	$22.61	$0.73	$7.08	-$110.79
09/08/05	10/07/05	13	46	51	219	329	-29	-15	-125	-77	-246	-16	31	-74	142	-$2.09	$3.17	-$24.56	$15.62	$0.38	-$7.48	-$118.27
10/07/05	11/09/05	27	229	0	0	256	-107	-83	0	0	-190	-80	146	0	0	-$10.49	$14.89	$0.00	$0.00	$0.30	$4.70	-$113.57
11/09/05	12/12/05	39	266	0	0	305	-60	-77	0	0	-137	-21	189	0	0	-$2.76	$19.39	$0.00	$0.00	$0.77	$17.40	-$96.17
12/12/05	01/11/06	27	176	0	0	203	-66	-44	0	0	-110	-39	132	0	0	-$5.20	$13.68	$0.00	$0.00	$0.43	$8.91	-$87.26
01/11/06	02/09/06	23	211	0	0	234	-103	-71	0	0	-174	-80	140	0	0	-$11.36	$15.70	$0.00	$0.00	$0.29	$4.63	-$82.63
02/09/06	03/13/06	24	253	0	0	277	-123	-114	0	0	-237	-99	139	0	0	-$14.99	$15.64	$0.00	$0.00	$0.19	$0.84	-$81.79
03/13/06	04/11/06	14	161	0	0	175	-136	-142	0	0	-278	-122	19	0	0	-$18.50	$2.16	$0.00	$0.00	-$0.50	-$16.84	-$98.63
04/11/06	05/10/06	12	189	0	0	201	-145	-92	0	0	-237	-133	97	0	0	-$20.25	$11.04	$0.00	$0.00	-$0.18	-$9.39	-$108.02
05/10/06	06/09/06	17	196	15	72	299	-148	-107	-7	-13	-275	-131	89	8	59	-$19.88	$9.90	$3.34	$7.36	$0.11	$0.83	-$107.19

Energy Charge Owed to SCE:	$0.00
TOU Meter Charge:	$31.60
Customer Charge:	$83.95
Lakewood UUT:	$0.25
State Tax:	$0.20
Total Adjustment:	$116.00

Total Account Balance Due: $116.00

The negative bottom line within the spread sheet ($-107.19) is a statement of our credit, but according to California law, there is no compensation to the customer for whatever credit might accrue during the year. That is, the electric company never writes us a check for our contribution to the power grid. We do, however, have to pay an annual TOU meter charge and Customer Charge.

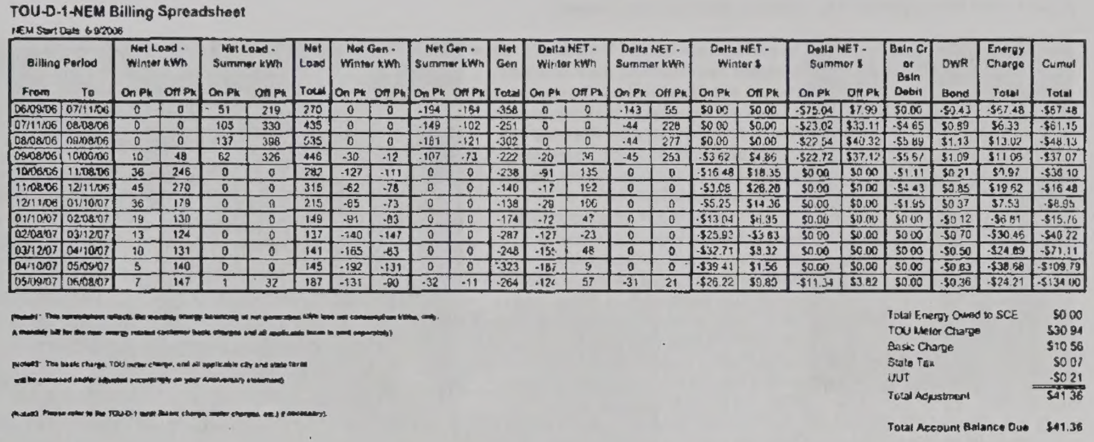
There is the added complication of TOU schedules. TOU-D-2 is for big users. Those users pay a lower average kwh rate, but their flat TOU meter charge and Customer Charge are higher than those for customers on the TOU-D-1 Schedule. The first year, shown here, was on the TOU-D-2 schedule. At the end of the year shown, we changed to the TOU-D-1 schedule in the expectation of breaking even again at the end of the next fiscal year and paying lower annual fixed charges.

Here are the four rates charged on the TOU-D-1 schedule. Note the usurious Summer On-peak rate, which as it turns out, worked in our favor - see below:

Period	Cost per kwh ($ U.S.)

Winter On Peak	0.202
Winter Off Peak	0.142
Summer On Peak	0.504
Summer Off Peak	0.147

The spread sheet for 06/09/06 to 06/09/07 looked like this:



TOU-D-1-NEM Billing Spreadsheet

NEM Start Date 6/9/2006

Billing Period		Net Load - Winter kWh		Net Load - Summer kWh		Net Load	Net Gen - Winter kWh		Net Gen - Summer kWh		Net Gen	Delta NET - Winter kWh		Delta NET - Summer kWh		Delta NET - Winter $		Delta NET - Summer $		Bsln Cr or Bsln Debit	DWR	Energy Charge	Cumul
From	To	On Pk	Off Pk	On Pk	Off Pk	Total	On Pk	Off Pk	On Pk	Off Pk	Total	On Pk	Off Pk	On Pk	Off Pk	On Pk	Off Pk	On Pk	Off Pk		Bond	Total	Total
06/09/06	07/11/06	0	0	51	219	270	0	0	-194	-164	-358	0	0	-143	55	$0.00	$0.00	-$75.04	$7.90	$0.00	-$0.43	-$67.48	-$67.48
07/11/06	08/08/06	0	0	105	330	435	0	0	-149	-102	-251	0	0	-44	228	$0.00	$0.00	-$23.02	$33.11	-$4.65	$0.89	$6.33	-$61.15
08/08/06	09/08/06	0	0	137	398	535	0	0	-181	-121	-302	0	0	-44	277	$0.00	$0.00	-$22.54	$40.32	-$5.89	$1.13	$13.02	-$48.13
09/08/06	10/06/06	10	48	62	326	446	-30	-12	-107	-73	-222	-20	36	-45	253	-$3.62	$4.86	-$22.72	$37.12	-$5.57	$1.09	$11.06	-$37.07
10/06/06	11/08/06	36	246	0	0	282	-127	-111	0	0	-238	-91	135	0	0	-$16.48	$18.35	$0.00	$0.00	-$1.11	$0.21	$0.97	-$36.10
11/08/06	12/11/06	45	270	0	0	315	-62	-78	0	0	-140	-17	192	0	0	-$3.08	$28.28	$0.00	$0.00	-$4.43	$0.85	$19.62	-$16.48
12/11/06	01/10/07	36	179	0	0	215	-65	-73	0	0	-138	-29	106	0	0	-$5.25	$14.36	$0.00	$0.00	-$1.95	$0.37	$7.53	-$8.95
01/10/07	02/08/07	19	130	0	0	149	-91	-83	0	0	-174	-72	47	0	0	-$13.04	$6.35	$0.00	$0.00	$0.00	-$0.12	-$6.81	-$15.76
02/08/07	03/12/07	13	124	0	0	137	-140	-147	0	0	-287	-127	-23	0	0	-$25.92	-$3.63	$0.00	$0.00	$0.00	-$0.70	-$30.46	-$40.22
03/12/07	04/10/07	10	131	0	0	141	-165	-83	0	0	-248	-155	48	0	0	-$32.71	$8.32	$0.00	$0.00	$0.00	-$0.50	-$24.89	-$71.11
04/10/07	05/09/07	5	140	0	0	145	-192	-131	0	0	-323	-187	9	0	0	-$39.41	$1.56	$0.00	$0.00	$0.00	-$0.83	-$38.68	-$109.79
05/09/07	06/08/07	7	147	1	32	187	-131	-90	-32	-11	-264	-124	57	-31	21	-$26.22	$9.80	-$11.34	$3.82	$0.00	-$0.36	-$24.21	-$134.00

(Note1) This spreadsheet reflects the monthly energy balancing of net generation kWh less net consumption kWhs, only.
A monthly bill for the non energy related customer basic charges and all applicable taxes is sent separately)

(note2) The basic charge, TOU meter charge, and all applicable city and state taxes
will be assessed and/or adjusted accordingly on your Anniversary statement)

(Note3) Please refer to the TOU-D-1 tariff (basic charge, meter charges, etc.) if necessary)

Total Energy Owed to SCE	$0.00
TOU Meter Charge	$30.94
Basic Charge	$10.56
State Tax	$0.07
UUT	-$0.21
Total Adjustment	$41.36
Total Account Balance Due	**$41.36**

The credit accrued during this year was $134.00, as shown. The fixed charges came to $41.36, which gave us a considerable saving over the previous year. Most unfortunately, the electric company discontinued the spread sheet for their TOU customers several months ago. Instead we receive a short statement which outlines the applicable charges for that month. To those of us who took the time to learn how to read the spread sheet this decision puts us at a decided disadvantage to be able to estimate how we are doing throughout the year. As if to add insult to injury, the short statement offers the customer a labyrinthine summary of the rate schedule with charges for such things as the " Transmission Owners Tariff Charge," the "Nuclear Decommissioning Charge," the "Public Purpose Programs Charge," the "The Public Utilities Commission Reimbursement Fee", and the "California Alternate Rates for Energy Surcharge, where applicable." All of these fees are charged by the kW hour and I have been told by a representative that there is variability from one month to the next as to which are applied to a specific customer's bill so that even if the customer wanted to create a private spreadsheet, it would be impossible because the rate changes slightly from month to month owing to which of the above charges apply. On the other hand, an approximate rate can be determined by using simultaneous equations between pairs of months in which only one rate "season" was involved: winter or summer. Since on-peak and off-peak rates are different, one can then calculate each rate for that particular pair of months. It isn't exact, but it is close. It does however require a passage of six months through the year (summer through fall to winter) to be able to establish a credible estimate. Stay tuned. I have one month yet to go before I'll have a bead on just what I'm being charged for my electricity.

The large credit accrued has at least one misleading characteristic: it largely represents credit at the highest rate, that is, "Summer On Peak." If a rather small balance shift were to occur toward Net Load from Net Generation for this period, **or possibly worse,** if the Summer On Peak rate dropped significantly, a customer would risk receiving a large electricity bill. One implication of this subtlety is that an owner of a new solar electrical generation system which generates at somewhat below the level of use, might be shocked to receive a whopping electrical bill based on the inflated Summer On Peak rate ($0.335 per kilowatt hour for the TOU-D-2 schedule and $0.504 for the TOU-D-1 schedule). However, the matter of credit vs. charge cuts both ways. For the periods 2005-2006 and 2006-2007, our energy use off the grid was positive. That is, more energy was pumped in from the grid than was generated by the solar panels (2005-2006, +443 kw hours; 2006-2007, +312 kw hours), but most of this energy came to us during periods of the low billing rates and was offset by net energy generated during the high billing rate period (Summer On Peak). Had we been able to opt NOT to convert to Time Of Use billing, and had continued receiving a bill calculated at a flat rate, we would have had to pay for our net energy consumption. At $0.13 per kw hour (close to the going flat rate), our bills for those two years would have been $57.59 and $40.56, respectively). Customers at the greatest disadvantage are those who install solar panels to generate some small fraction of electricity used and then switch to Time Of Use billing. Partly for this reason, the California State Senate on May 24, 2007 and the California State Assembly on June 6, 2007 passed Assembly Bill 1714 (and approved by the Governor) which allows the owners of new photovoltaic systems during the year of 2007 to opt NOT to have Time of Use (TOU) metering to be installed. The summary of the bill reads, in part: "This bill would authorize the PUC (Public Utilities Commission) to delay implementation of time-variant pricing for ratepayers with a solar energy system, until the effective date of the rates established in the next general rate case of the state's 3 largest electrical corporations. If the commission delays implementation of time-variant pricing, the bill would require that ratepayers required to take service under time-variant pricing between January 1, 2007, and January 1, 2008, and that would otherwise qualify for flat rate pricing, be given the option to take service under flat rate or time-variant pricing."

For the current year in progress, a change in the Summer On-peak rate from $ 0.504 per kWh last year to around $0.35 per kWh this year has occurred for reasons which at this writing are not clear. That will put our domestic system at a decided disadvantage because of the excess of generated energy for the Summer On-peak periods. That is, the cumulative credit received for that period will be less than that granted last year.

All that having been said, any annual credit, whether reflecting rate disparities between summer on-peak generation and winter off-peak consumption or a surplus of generated energy throughout the year will end up making the electric company your favorite charity. "Drat and Blast!" you say. What is to be done? A customer not entirely sympathetic to the hollow-eyed plea for a spirit of giving from the executives of our public utilities needs to find alternative consumption strategies so as to bring the surplus or the credit down to zero. There are a number of amusing and intriguing possibilities which I leave to the creative genius and resourceful diligence of the reader to discover and to put into practice.

Getting a check from the electric company?

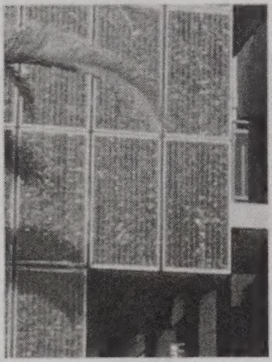
Starting in January, 2011, in California, people who generate excess electricity will be able to sell it to their electric company. That is, for the first time in history, the tops of our roofs will have profit potential. But before you go out and plunk down the better part of your family fortune to have solar panels installed, the fine print tells you that a customer must have both a $ credit at the end of the year and have generated more kwH than were consumed to get a check from the electric company. Moreover, since the advantages of rebates and tax credits are forsaken if an installation greatly exceeds one's need for electricity, very few customers will ever see a check at the end of the year. That's all right, I hear you say, I'll install more panels than I need and not expect to get the rebates or tax credits on the extra ones. I'll cover my roof with those extra solar panels and become rich! Gulp! It turns out that the electric company has practically stonewalled that idea in testimony before the California Public Utilities Commission by presenting the argument that there are many expenses connected with delivering energy to the customer; those added expenses justify that the check to the customer be discounted to around 40% of what the customer pays for electricity. That is, if your current flat rate is 13 cents per kwH, you'd get about 5 cents per kwH for your excess generated electricity, hardly enough ever to break even.

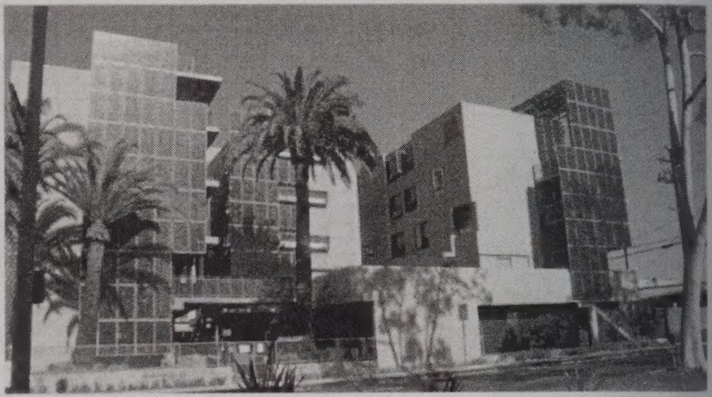
An amusingly diabolical opportunity?

Still, many clouds have silver linings, and here is one to think about. You have a computer which monitors your photovoltaic system and estimates on the basis of daily use and generation and past knowledge of annual use and generation how much extra energy you can produce each day. Then there is this guy who shows up each month with an empty black box, unhooks a full black box from the previous month, attaches the empty black box, writes you a check and leaves. He's jolly and wears a white jump suit just like the man who delivers bottled water, except that this guy brings in something empty and leaves with another one which is full. Your assignment, dear reader, is to figure out what will be in the black box to make you rich! Nice idea, huh?

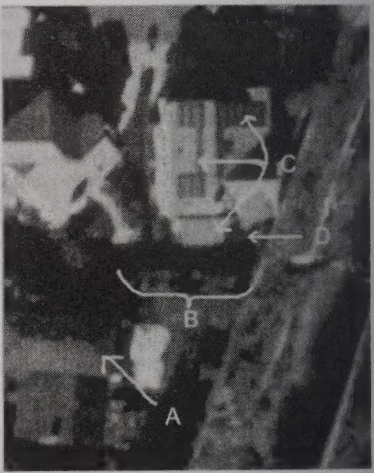
Solar Silliness

When we installed the panels on our house roof I had the expectation that we could allow them to sit there without a worry or care and to generate electricity during daylight hours for the next twenty-five years when the guarantee runs out. That they ought to be exposed to unshaded sunlight was obvious, but my early discovery that in order to achieve maximum output they need also to be rinsed periodically was an early lesson in the maintenance of solar panels. I have been more recently surprised that these two points are not fully appreciated by everyone, not even some "experts."

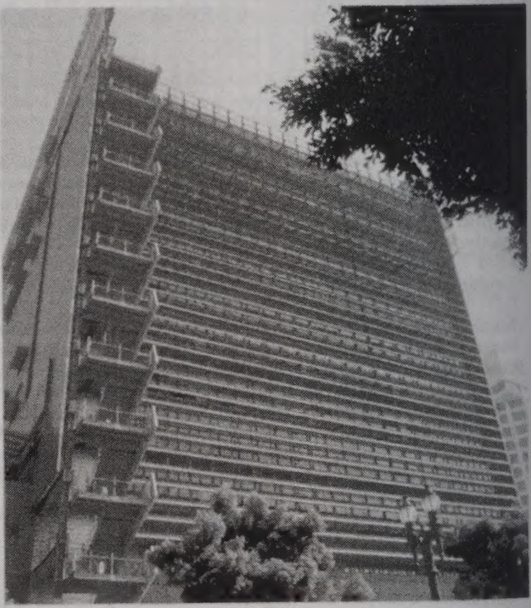


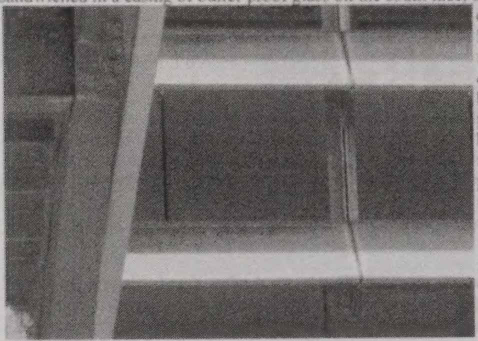


As more people install PV systems it stands to reason that some will make informed choices and others will not. It is with more than a little amusement then that one can find some rather large but ill-conceived installations carried out by people one would think should know better. Here is an ambitious private installation of approximately 35 kW on an apartment house in Santa Monica, California, consisting of both vertically and horizontally mounted panels. The vertical panels face southwest and do not receive direct sunlight until late each morning. Moreover, neither the vertical panels nor the horizontal panels at the right are tilted toward the south at the angle of latitude. The shadows cast by the 3 palm trees and the eucalyptus tree (right) for the better part of the day almost certainly will have an attenuating effect on the energy output; how much would be a function of the internal series/parallel circuitry but could be determined with a simulated equivalent unshaded system. There does seem to be a cleaning schedule in place judging from the blue crystalline appearance of the panels' surfaces, at left.



The shading of one's solar panels by a neighbor's trees can rise to a litigious level if one lives in California. The Solar Shade Control Act, signed by the governor in 1978, bans trees or shrubs from shading more than 10 percent of a neighbor's solar panels between 10 a.m. and 2 p.m. and includes shading on panels installed after the trees were planted if the trees grow to such a height to produce shade which exceeds that which is allowed by the law. A recent celebrated case invoking that law involves neighbors in a community near San Francisco. Neighbor A planted eight redwood trees, B, between 1997 and 1999. Neighbor C installed a 10 kW photovoltaic solar panel system, C, in 2001. Redwood trees, B, grew until their shade, D, exceeded that which is allowed by the Solar Shade Control Act. In December 2007, Santa Clara County Superior Court Judge Kurt Kumli ruled that six of the trees can remain and that the two generating the most shade must be removed. It was reported on July 23, 2008 by KGO-TV that Governor Schwarzenegger has settled the conflict by signing a bill which states that a tree which casts a shadow onto a neighbor's solar panel will no longer have to be cut down, as long as the trees were planted before the panels were installed.

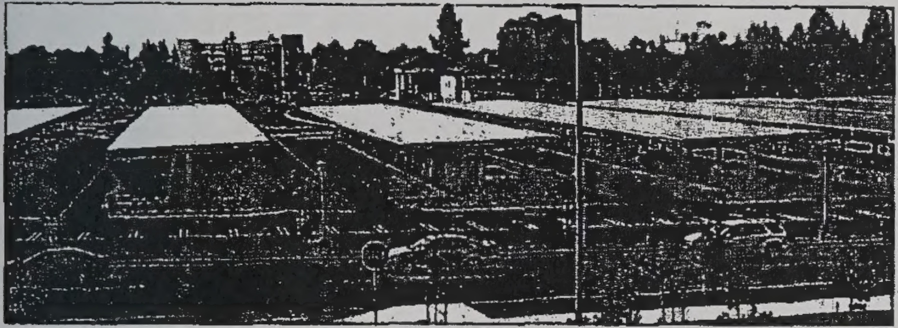




The California Department of Transportation building in Los Angeles (right) has a system of panels sandwiched in a casing of bullet-proof glass on the south face, but notice in the close-up that each rank of panels shadows the one below. Moreover, there is no cleaning schedule for the glass surface. If one could depend on frequent inundations blowing from the south then these panels would be periodically cleaned, but that kind of weather doesn't happen in southern California. We have lengthy periods without rain and when the storms do come they're more often in the form of vertical drizzles which will very definitely clean the uppermost rank of panels but do little good for the ones below.

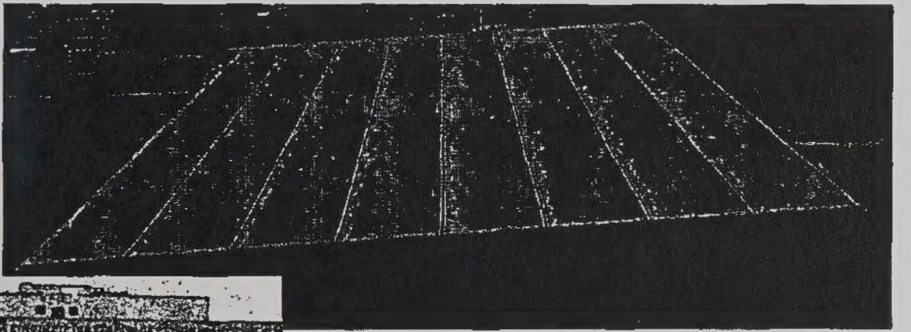
The Los

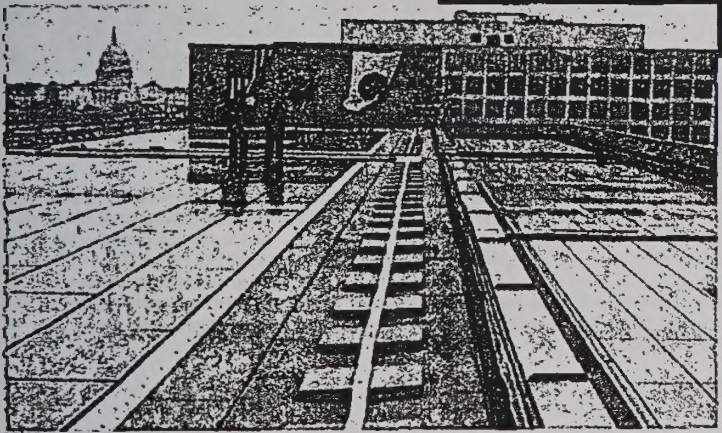
Angeles
Convention Center has a system which was installed by the L.A. Department of Water and Power. The panels were placed around the periphery of the building well below the roof line (I would estimate 4-7 meters). The panels which are mounted on the east and west sides receive no direct sunlight for about half of each day. The ones mounted on the west side and shown in the photograph at the right are in the shade until early afternoon.



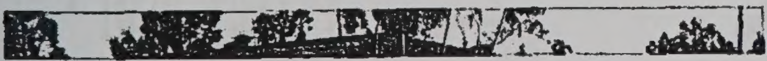
A system consisting of 3872 300 watt panels (Schott ASE-300-DGF/50) yielding a rated power output of 1162 kilowatts was recently installed on the campus of CSU Fresno over Parking Lot V. The general contractor for this installation was Chevron Energy Solutions. The owner of the panels is MMA Renewable Ventures with which the campus has entered into a 20-year power purchase agreement at a starting rate of $0.16 per kilowatt hour and a 2% annual inflation adjustment. An examination of current rates paid by big users of electricity makes a rate of $0.16 per kilowatt hour appear to be a bit pricey. Note that there seems to be a slight tilt toward the south of 1-2 degrees, possibly with drainage in mind.

However, in the image at the right which has had its brightness reduced and contrast increased, the effect of such drainage where morning dew and occasional drizzles are the only sources of precipitation for several months running is a distinct residue which builds up over the cells at the lowest elevation of each set of panel segments. It is not clear at this writing if there is a program of routine rinsing in place.





solar
panels. Sure enough, 891 x 230 / 1000 = 204.93 kilowatts. But Washington, D.C. is at latitude 38 ° 53' north which means that at the very best, the rated power output of horizontal panels will be attenuated by an average factor of
cosine(38 ° 53') = 0.78 , decreasing the figure above to 159.6 kilowatts. Judging from the image at the right, it would appear that there isn't the slightest indication of tilt so as to allow the panels to self-clean in the annual rainfall of 39.3 inches. (100 cm). The average solar energy in Washington, D.C. is about 73% that of southern California, so it could be argued that horizontal panels will gain a little from the diffuse sunlight through the frequent cloud cover over Washington, D.C., but most likely the gain will be more than offset by the loss due to the lack of tilt on sunny days. Moreover, one would expect the dustfall on these panels to turn to mud on the surface, not unlike some of the other examples in this section, until the panel guys arrive to give them a power rinse. Where is this ill-conceived installation, I hear you ask? It is on the roof of the headquarters of the . . . wait for it . . . U.S. Department of Energy.

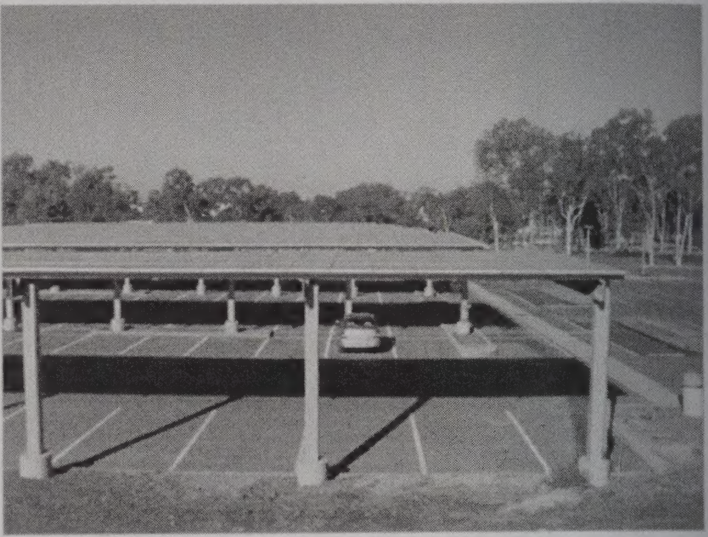


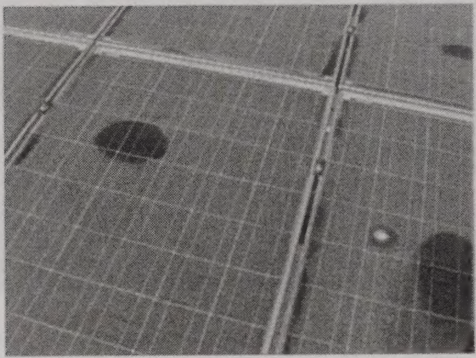
This installation may be found above the top level of a parking structure on Holliston Avenue at Caltech in Pasadena, California. It consists of

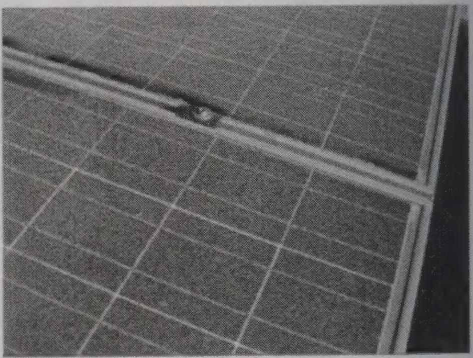
1404 170 watt Suntech STP170S-24/Ab-1 panels, giving a total rated power output of 238.68 kilowatts. The sign in the photo at the driveway claims 199 kilowatts. It was installed by EI Solutions. Note that the panels are mounted horizontally. What is not clear from the image is that the only practical access to the panels for periodic rinsing would have to be by hydraulic lift on the east and west sides. The installation runs nearly the length of the structure and the limited access to the panel surface at the north and south ends would make periodic rinsing of the entire panel surface impractical from those access points. A representative of Suntech Energy Solutions points out that where the realization of installations such as this, including the execution of "power purchase agreements" by investor groups, are concerned, optimizing energy output is only one of a variety of considerations. The others are the level and conditions of any production rebate, time-of-use energy tariffs by the electrical utility, financing requirements for the area available and the stated objectives of the client. That is, given the sometimes conflicting agendas encountered when putting together an investor group to realize an installation such as this, other exigencies have to be considered.

A Case Study

A large system (557 kW) was recently installed on the campus of CSU Dominguez Hills by Sun Edison. There are 3279 panels, each rated at 170 watts, bringing the maximum rated power output to 557,430 watts or 557.43 kilowatts. The panels have been mounted nearly horizontally over Parking Lot 1. At our latitude of 34 degrees north they ought to have been tilted toward the south by 34 degrees if the objective is to maximize the generation of energy. At noon at our latitude on the summer solstice the sun is 10.5 degrees from the vertical. At noon on the winter solstice it is 57.5 degrees from the vertical. Assuming 0% loss if the panels are pointing directly at the sun, horizontal panels suffer a power loss of 1.7% and 46.3% at noon on the summer and winter solstices, respectively, for an average annual loss of 24%. On the other hand, under Time of Use (TOU) billing (discussed above), the On-peak period is from 10am to 6pm when the rate charged is higher and if the objective is to maximize one's $ credit the panels ought to be tilted appropriately in a southwesterly direction. Even though we often get brilliant sunlight in southern California from 7am to 10am, that time period still falls in the category of Off-peak.



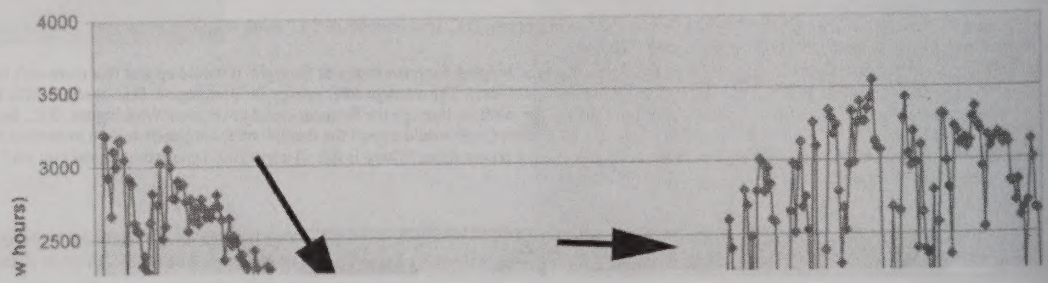




But it gets worse than that. The lack of tilt means that there is no natural gravity runoff for rain or rinse water. If it appears to you that from the acute angle of view in the photo above the surface color is something other than the typical metallic blue of a silicon photovoltaic cell, you would be right. It appears (at this writing in the fall of 2006) that there has been no rinsing service to maintain maximum output. The surface has been allowed to collect the dustfall of greater Los Angeles since installation around four months ago during which time there has been no rainfall. It is not clear at this writing what the dark spots in the middle of several of the panels represent, but the buildup of dirt certainly doesn't bode well for the overall output of the panel array. It is also not clear at this writing who suffers the greatest disadvantage (the university or the power company) if the power output drops significantly due to lack of maintenance. Only knowledge of the specific billing arrangement worked out in the contract would reveal that information.

Do real data support the depressing conclusion expressed above? Well, yes, generally. On February 28, 2007, a cloudless day from 10am to early afternoon, the system on our rooftop peaked at 10:51 am with an average power output of 2271 watts over the 15 minute interval (7 minutes on either side) which bracketed the maximum of 2284 watts. Taking the theoretical maximum power output specification of these panels, the 2271 watt average translates to [2271/(18 x 165)]x100 = 76.5%. On that same day the power of the university system peaked at 12:15 pm, showing a power output of 319,841 watts. Carrying out an equivalent calculation one gets [318,841/(3279 x 170)] x 100 = 57.4%, a value diminished, I would offer, by the lack of tilt of the panels at the angle of our latitude. We are stymied at this point from looking more closely at these figures and trying to establish how much the diminished value is caused by the lack of tilt and how much by dustfall because the tilt of the domestic roof-top system is itself not ideal. One would need to observe the output of at least one 170 watt panel the normal vector of which is pointing directly at the sun at the time of maximum power by the array of 3279 panels to establish a credible attenuation of power owing both to tilt as well as dustfall.

Here is the one-year line chart of energy generated vs. date for the university system.



Note the two discontinuities identified by the arrows. They represent the increased output following rinsing. That we are experiencing the driest year since records have been kept starting in the latter part of the nineteenth century, we've had many cloudless days. All maxima on the chart above are representative of energy output on cloudless days. Taking the highest adjacent maxima before and after cleaning, we have 10/27/2006 and 10/28/2006, 1644 kwh and 1930 kwh. The lower value is 85.2% of the upper value. Again on 3/15/2007 and 3/16/2007 we have 2222 kwh and 2599 kwh respectively. The low value is 85.5% of the higher value, suggesting that the event which triggers rinsing by the maintenance crew is a 15% drop from maximum expected value. The very low energy outputs and those at zero are unexplained. They are either outages of the panel system for part or all of the day or there was a failure of the data collection system. No explanation is available at this writing.

Conclusion

So as to gain maximum advantage from an installed system of photovoltaic panels, the following preliminary conclusions can be made. Most unfortunately, if you are not a resident of the State of California, only (2), (3) and possibly (1) make any sense. Read on:

1. If you are connected to a grid, install a system sufficiently large to generate as much energy as you consume during summer and winter periods, because if your rate varies by time of day and by season, and you take advantage of generating more energy than you consume during summer daylight hours, when the rate is the highest, and consume more than you generate during long winter nights when the rate is lower, there is no guarantee that such a rate schedule will remain to your advantage over the long term. In any case, you need to start thinking about a Plan B to use up the energy credit you build up throughout the year and possibly to install more panels if you find yourself suddenly having to pay for electricity.
2. Tilt your panels toward the south (in the northern hemisphere) or toward the north (in the southern hemisphere) at the angle of your latitude.
3. Regularly rinse your panels to keep them clean and to maximize their output.
4. If the panels meet all of your electrical energy needs, that is, if energy consumption is close to energy generation, then the decision to switch to "Time of Use" metering makes sense only if the Winter Off Peak rate is so much lower than the Summer On Peak rate that some Plan B for using up the accrued credit becomes financially appealing.
5. Don't opt for "Time of Use" metering if your panels produce somewhat less than your electricity requirement during the winter, but more than you use during the summer because a slight change in rate of one period vs. another can make the difference between an annual energy credit and an unwelcome electricity bill. Moreover, if the electric company eliminates the method you have used to track your credit/debit status by introducing a "new and improved" electricity statement and/or a change in rate for one or more periods without prior announcement, you'll be, in our vernacular, up a creek without a paddle.
6. If your panels produce only a small fraction of the electrical energy you use throughout the year then do NOT switch to TOU metering. Doing so would subject you to the inflated "Summer On Peak" rate which at this writing is on the order of three times the flat rate.

Send a message to Oliver about this page? Click here.

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Attachment F - Kramer Junction Mitiigated
Negative Declaration

SAN BERNARDINO COUNTY
INITIAL STUDY ENVIRONMENTAL CHECKLIST FORM

This form and the descriptive information in the application package constitute the contents of Initial Study pursuant to County Guidelines under Ordinance 3040 and Section 15063 of the State CEQA Guidelines.

PROJECT LABEL:

APN: 0491-091-07
Applicant: Mr. Cory Ramsel
Boulevard Associates, LLC
700 Universe Boulevard
Juno Beach, FL 33408
(561) 304-5294
Community: Kramer Junction
Location: Highway 395; approximately 2.5 miles north of Highway 58
Project No: P200900523
Staff: Doug Feremenga, AICP, Senior Planner
Rep: Mr. Cory Ramsel
Boulevard Associates, LLC
700 Universe Boulevard
Juno Beach, FL 33408
(561) 304-5294
Proposal: A Conditional Use Permit to establish a 20 megawatt Solar Photovoltaic Energy Facility on a 191-acre portion of a 313.8-acre parcel.

USGS Quad: Saddleback Mountain
T, R, Section: T11N R6W Sec. 19
Thomas Bros.: P 348 / GRID: H-6
Community Plan: N/A
LUZD: RC- Resource Conservation
Overlays: Biotic Resources
Cultural Resources
Paleontological Resources

PROJECT CONTACT INFORMATION:

Lead agency: County of San Bernardino
Land Use Services Department
385 N. Arrowhead Avenue
San Bernardino, CA 92415-0182

Contact person: Doug Feremenga, AICP, Senior Planner
Phone No: (909) 387-0240 Fax No: (909) 387-3223
E-mail: dferemenga@lusd.sbcounty.gov

PROJECT DESCRIPTION:

Boulevard Associates, LLC ("Boulevard") proposes to construct and operate a 20 Megawatt (MW) photovoltaic (PV) solar energy facility on the west side of U.S. Highway 395; approximately 2.5 miles North of Highway 58, adjacent to the existing NextEra Energy Resources, LLC's Solar Energy Generating Systems (SEGS) III-VII solar energy generation facility near Kramer Junction, in unincorporated San Bernardino County (County). Specifically, the project area is situated on the west half of Section 19, Township 11 North, Range 6 West of the U.S. Geological Survey (USGS) Saddleback Mountain, CA 7.5-minute topographic quadrangle at approximately Latitude 117 33'27.744"W and Longitude 35 2'5.183"N (See **Figure 1: Vicinity Map**).

Adjacent tracker units would share a north ballast. The tracker unit ballasts would be approximately nine (9) feet long by two (2) feet wide and six (6) inches to one (1) foot above grade.

In addition to the panels and tracking structures, the proposed project shall have an intermediate voltage collection system, direct current-to-alternating current (DC-AC) inverters, switchyard, and step-up transformer(s). Each panel converts solar energy to electrical energy at 600 Volts. The electricity flows to the inverters through a rack mounted cabling system connected to underground collection lines in conduits that shall terminate at the end of each 72 tracker unit row at a combiner box and is converted from direct to alternating current and output at 34.5 kV (kilovolts). The electricity is then collected by a dedicated collection system that terminates at the facility switchyard, where the voltage is stepped-up to 115-kV. The energy is then transported to the regional grid via an interconnect to the existing Kramer 115 kV overhead transmission line owned and operated by Southern California Edison.

The proposed project shall only produce energy when sufficient sunlight is available and shall be completely idle when the sun is insufficient to generate electricity. Project staff shall perform all work and maintenance during normal business hours Monday through Friday between 6am and 6pm. Once operational, the onsite staff is expected to be limited to a one (1) -to- two (2) person maintenance team with supplemental staff added when needed for site maintenance, panel washing, or electrical repairs. Additionally, it is anticipated that up to ten (10) additional individuals (general labor) may be mobilized to clean the PV panels over a two (2) -to- four (4) week period. No habitable structures are planned as part of the project, and therefore no water, sewer, or gas utilities would be necessary. No signs, landscaping, or parking areas are planned. An open-air switchyard would be constructed on the eastern border of the solar array adjacent to the existing SCE transmission line; the equipment shall be mounted on a concrete pad measuring 190' x 390'. The project shall consume minimal amounts of water for the occasional cleaning of panels as they become dusty throughout the year. Water shall be trucked in from the adjacent SEGS facility or an offsite municipal source. Applicant expects to wash the PV panels at least once per year using approximately 150,000 gallons (0.43 acre-feet) of water that shall be trucked to the site from the nearby SEGS facility.

It is anticipated that construction of the proposed project would take approximately eight (8) months commencing in November 2010. It is estimated that the number of onsite workers will average 104 per day and the peak will be 127 per day. Worker commute vehicles will account for the majority of traffic trips to the site. It is estimated that there will be approximately 20 pieces of construction equipment onsite each month. Construction equipment would include the following:

Attachment G - Las Vegas Sun Article

Las Vegas Sun

Dirty detail: Solar panels need water

How much is the question, as developers downplay frequency of cleanings

By *Stephanie Tavares* (contact)

Friday, Sept. 18, 2009 | 2 a.m.

Southern Nevada may pose more of a dirty little problem for some solar plant developers than they realize or are letting on.

Solar photovoltaic developers say not to worry about how much water their plants will use because they need only enough water to run the office bathrooms and wash the arrays of panels a couple of times a year.

But people who live near proposed plants or maintain solar panels in the desert guffaw at that last bit and are willing to bet the panels will need to be hosed down more frequently.

Dust on solar panels can decrease their efficiency by about 3 percent, solar photovoltaic experts said. The larger the solar array, the more electricity lost.

“On a home that doesn’t mean much of anything, but on a huge solar power plant that could mean real money,” said Nevada solar panel installer Chris Brooks, director of renewable energy for Bombard Electric.

Most photovoltaic arrays are cleaned with tap water sprayed with a hose or from a water truck. So solar array managers have to add in the cost of labor, truck rental and gasoline. In a water-starved desert, the additional consideration is how much of the region’s most critical natural resource will wind up evaporating or dripping into the desert.

Solar photovoltaic developers say their plants don’t use much water, but “much” is relative. True, they use a fraction of what a water-cooled solar thermal power plant consumes annually — about a 16,689 gallons per megawatt for photovoltaics compared with 2.61 million gallons per megawatt for wet-cooled solar thermal — but a large photovoltaic array can still easily use more water in a year than an entire residential block.

The array planned for Primm, for example, is expected to annually require at least as much water as 10.5 average Las Vegas households. NexLight North and NexLight South, which have been combined in the first industrial-scale solar photovoltaic array planned the Bureau of Land Management land in Nevada, would need to truck in about 6.8 million gallons of water a year, developers reported in planning documents. That’s enough, they say, to clean the thousands of acres of solar panels about twice a year.

Although that is the industry standard for washing large arrays of solar panels, few large solar arrays in the Mojave get away with so few cleanings.

UNLV's photovoltaic arrays are washed about monthly. NV Energy washes the panels at the Clark Generating Station about four times a year. Other NV Energy owned solar panels are washed three times a year.

When NexLight disclosed plans for biannual cleanings at BLM scoping meetings, locals scoffed. If the dust on the cars in the parking lot was any indication, the developers would be cleaning those panels a lot more than twice a year. The dust in the Ivanpah Valley can be brutal under normal circumstances, residents said. But the area is also a popular spot for large multiday off-road races that can stir up even more dust.

The NexLight plants are planned smack dab in the middle of a popular off-road raceway, which the company proposes rerouting around the solar plant.

Just washing the panels more often is not the easy solution it sounds like. If the increase in electrical output won't generate more money than it costs to wash the panels, they can just stay dirty.

"Efficiency does drop off with time," said Bob Boehm, director of UNLV's Center for Energy Research. "But you really have to balance the loss in efficiency from the dust with the cost of the water and labor."

So solar array managers try to keep the panels cleanest when the solar panels are operating at maximum efficiency in the long days of spring and summer. Unfortunately, that's when demand for water is the highest, putting even more strain on a scarce resource.

When they can, operators of solar arrays let Mother Nature do the work for them. Though Southern Nevada gets only about 4 inches of rain in a good year, the weather is relatively predictable. That gives solar array managers time to get the panels ready for cloudy weather and, they hope, a free cleaning.

That preparation is a must. Cold water on a very hot solar panel usually means shattered glass, so managers have to power down arrays well before either a cleaning or rainfall. If the storm produces rain that falls in a torrent, they've hit the jackpot.

"A really good rainstorm means you don't need to worry about washing your panels for a while," Boehm said. "But if you get this typical Las Vegas rainstorm with tons of wind and dust and forty-five drops of rain, that's the worst kind of thing. It just plasters the dirt to the panel."

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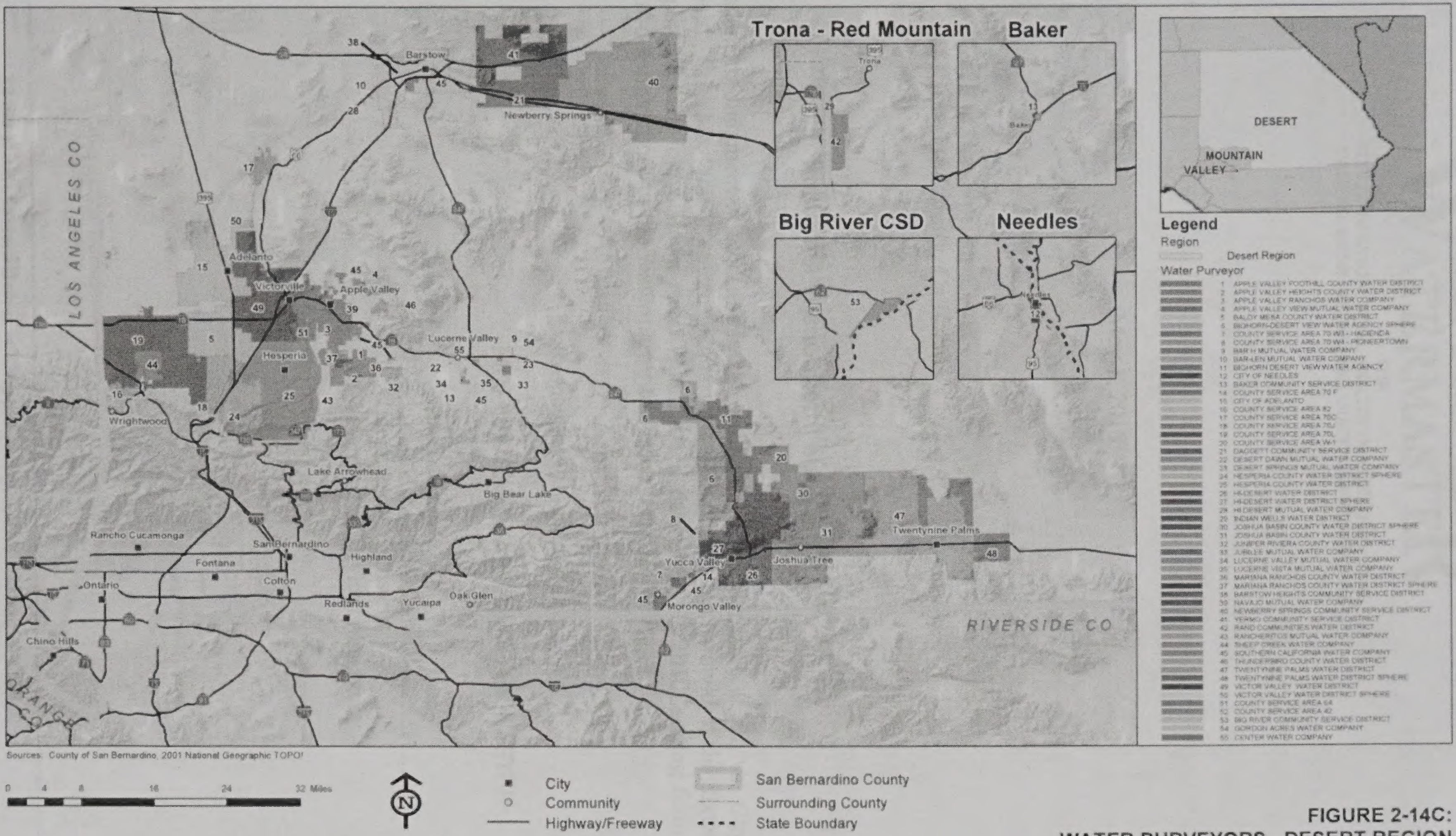
Attachment H - Water Purveyors - Desert Region

General Plan
County of San Bernardino

CIRCULATION AND INFRASTRUCTURE


Trona - Red Mountain
Baker
Big River CSD
Needles
DESERT
MOUNTAIN VALLEY
LOS ANGELES CO
RIVERSIDE CO
ORANGE CO
Barstow
Newberry Springs
Adelanto
Victorville
Apple Valley
Hesperia
Lucerne Valley
Wrightwood
Lake Arrowhead
Big Bear Lake
Rancho Cucamonga
San Bernardino
Fontana
Highland
Colton
Ontario
Redlands
Yucaipa
Oak Glen
Chino Hills
Yucca Valley
Joshua Tree
Twentynine Palms
Morongo Valley
Trona
Baker
Needles
Legend
Region
Desert Region
Water Purveyor
1 APPLE VALLEY FOOTHILL COUNTY WATER DISTRICT
2 APPLE VALLEY HEIGHTS COUNTY WATER DISTRICT
3 APPLE VALLEY RANCHOS WATER COMPANY
4 APPLE VALLEY VIEW MUTUAL WATER COMPANY
5 BALDY MESA COUNTY WATER DISTRICT
6 BIGHORN-DESERT VIEW WATER AGENCY SPHERE
7 COUNTY SERVICE AREA 70 W3 - HACIENDA
8 COUNTY SERVICE AREA 70 W4 - PIONEERTOWN
9 BAR H MUTUAL WATER COMPANY
10 BAR-LEN MUTUAL WATER COMPANY
11 BIGHORN DESERT VIEW WATER AGENCY
12 CITY OF NEEDLES
13 BAKER COMMUNITY SERVICE DISTRICT
14 COUNTY SERVICE AREA 70 F
15 CITY OF ADELANTO
16 COUNTY SERVICE AREA 82
17 COUNTY SERVICE AREA 70C
18 COUNTY SERVICE AREA 70J
19 COUNTY SERVICE AREA 70L
20 COUNTY SERVICE AREA W-1
21 DAGGETT COMMUNITY SERVICE DISTRICT
22 DESERT DAWN MUTUAL WATER COMPANY
23 DESERT SPRINGS MUTUAL WATER COMPANY
24 HESPERIA COUNTY WATER DISTRICT SPHERE
25 HESPERIA COUNTY WATER DISTRICT
26 HI-DESERT WATER DISTRICT
27 HI-DESERT WATER DISTRICT SPHERE
28 HI-DESERT MUTUAL WATER COMPANY
29 INDIAN WELLS WATER DISTRICT
30 JOSHUA BASIN COUNTY WATER DISTRICT SPHERE
31 JOSHUA BASIN COUNTY WATER DISTRICT
32 JUNIPER RIVIERA COUNTY WATER DISTRICT
33 JUBILEE MUTUAL WATER COMPANY
34 LUCERNE VALLEY MUTUAL WATER COMPANY
35 LUCERNE VISTA MUTUAL WATER COMPANY
36 MARIANA RANCHOS COUNTY WATER DISTRICT
37 MARIANA RANCHOS COUNTY WATER DISTRICT SPHERE
38 BARSTOW HEIGHTS COMMUNITY SERVICE DISTRICT
39 NAVAJO MUTUAL WATER COMPANY
40 NEWBERRY SPRINGS COMMUNITY SERVICE DISTRICT
41 YERMO COMMUNITY SERVICE DISTRICT
42 RAND COMMUNITIES WATER DISTRICT
43 RANCHERITOS MUTUAL WATER COMPANY
44 SHEEP CREEK WATER COMPANY
45 SOUTHERN CALIFORNIA WATER COMPANY
46 THUNDERBIRD COUNTY WATER DISTRICT
47 TWENTYNINE PALMS WATER DISTRICT
48 TWENTYNINE PALMS WATER DISTRICT SPHERE
49 VICTOR VALLEY WATER DISTRICT
50 VICTOR VALLEY WATER DISTRICT SPHERE
51 COUNTY SERVICE AREA 64
52 COUNTY SERVICE AREA 42
53 BIG RIVER COMMUNITY SERVICE DISTRICT
54 GORDON ACRES WATER COMPANY
55 CENTER WATER COMPANY
0 4 8 16 24 32 Miles
N
City
Community
Highway/Freeway
San Bernardino County
Surrounding County
State Boundary

Sources: County of San Bernardino, 2001 National Geographic TOPO!

FIGURE 2-14C:
WATER PURVEYORS - DESERT REGION

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Attachment I - Mojave Basin Area Water Master Report

MOJAVE BASIN AREA
WATERMASTER
FOR
CITY OF BARSTOW, ET AL, VS. CITY OF ADELANTO, ET AL,
CASE NO. 208568 - RIVERSIDE COUNTY SUPERIOR COURT

May 1, 2010

TO: **Clerk of the Superior Court**
of Riverside County, California

RE: **Watermaster Annual Report for Water Year 2008-09**

Pursuant to Judgment After Trial in the case of City of Barstow, et al., vs. City of Adelanto, et al., Case No. 208568 entered January 10, 1996, submitted herewith is the Sixteenth Annual Report of the Mojave Basin Area Watermaster, dated May 1, 2010, setting forth the activities and determinations of the Watermaster for Water Year 2008-09.

Respectfully submitted,

MOJAVE BASIN AREA WATERMASTER

By: V. Wiegenstein
Valerie L. Wiegenstein
Watermaster Services Manager

Subarea Water Levels

Water levels within each of the five Subareas were reviewed as part of the Watermaster's investigation into Subarea conditions and recommendations on Free Production Allowance. The Judgment does not specifically require that Watermaster consider changes in water levels in its investigation but Paragraph 24 (o) of the Judgment requires Watermaster to consider changes of water in storage. Rising and falling water levels within the Basin Area are indications of changes in storage over time. Annual changes in storage are indicated by Table 5-2. While the amount of water level data collected and maintained by MWA is extensive, it is not sufficient to determine changes in storage in each Subarea by using changes in water levels. However, the data is sufficient to make generalizations about the conditions in each Subarea.

Hydrographs of wells generally representative of Subarea conditions are maintained by MWA for public review at:

Alto:	www.mojavewater.org/Subareas/Alto/Maps.aspx
Baja:	www.mojavewater.org/Subareas/Baja/Maps.aspx
Centro:	www.mojavewater.org/Subareas/Centro/Maps.aspx
Este:	www.mojavewater.org/Subareas/Este/Maps.aspx
Oeste:	www.mojavewater.org/Subareas/Oeste/Maps.aspx

The hydrographs were presented for inspection at the March 2010 Watermaster meeting and discussed in detail by the Engineer. Figures 3-10 through 3-16 are reduced copies of the exhibits available on the MWA website. A summary of the water levels for each Subarea is presented below.

Alto Subarea

Water levels in Alto are presented on three maps depicting hydrographs that represent conditions throughout Alto. 1) Western portion is generally west of the Mojave River (the river is included in the western portion); 2) Eastern portion is generally east of the Mojave River; and 3) Alto Transition Zone. Alto water levels near the river are relatively stable exhibiting seasonal variation, rising in winter and falling in summer. The near river wells also indicate rising and falling water levels consistent with available recharge from storms. It is expected that under current pumping conditions and long term precipitation that near river wells will remain stable. Water levels in the western portion of Alto in the regional aquifer exhibit declines consistent with locally heavy pumping and limited local recharge. Water levels in the eastern portion of

Alto indicate similar trends although to a lesser extent; most likely due to limited pumping in the regional aquifer east of the river. Continued pumping in depleted areas of the regional system may result in long local negative impacts such as declining yields and water quality problems. Watermaster is not aware of wide spread problems in the regional system due to the falling water table. The relative stability of near river water levels and water levels in the Transition Zone indicate hydrologic stability in the relationship between Alto and the downstream Subareas.

Baja Subarea

Baja water levels continue to decline due to over pumping and limited recharge opportunities. Wells near the river in the Daggett area respond to recharge when it is available but continue to fall immediately following storm events. Water levels in the area near the river at Camp Cady indicate relative stability due to water perched in the shallow aquifer, limited pumping and geologic factors such as narrowing of the basin sediments near Camp Cady and downstream. Water levels elsewhere in Baja show declines without indicating recovery after storms.

Centro Subarea

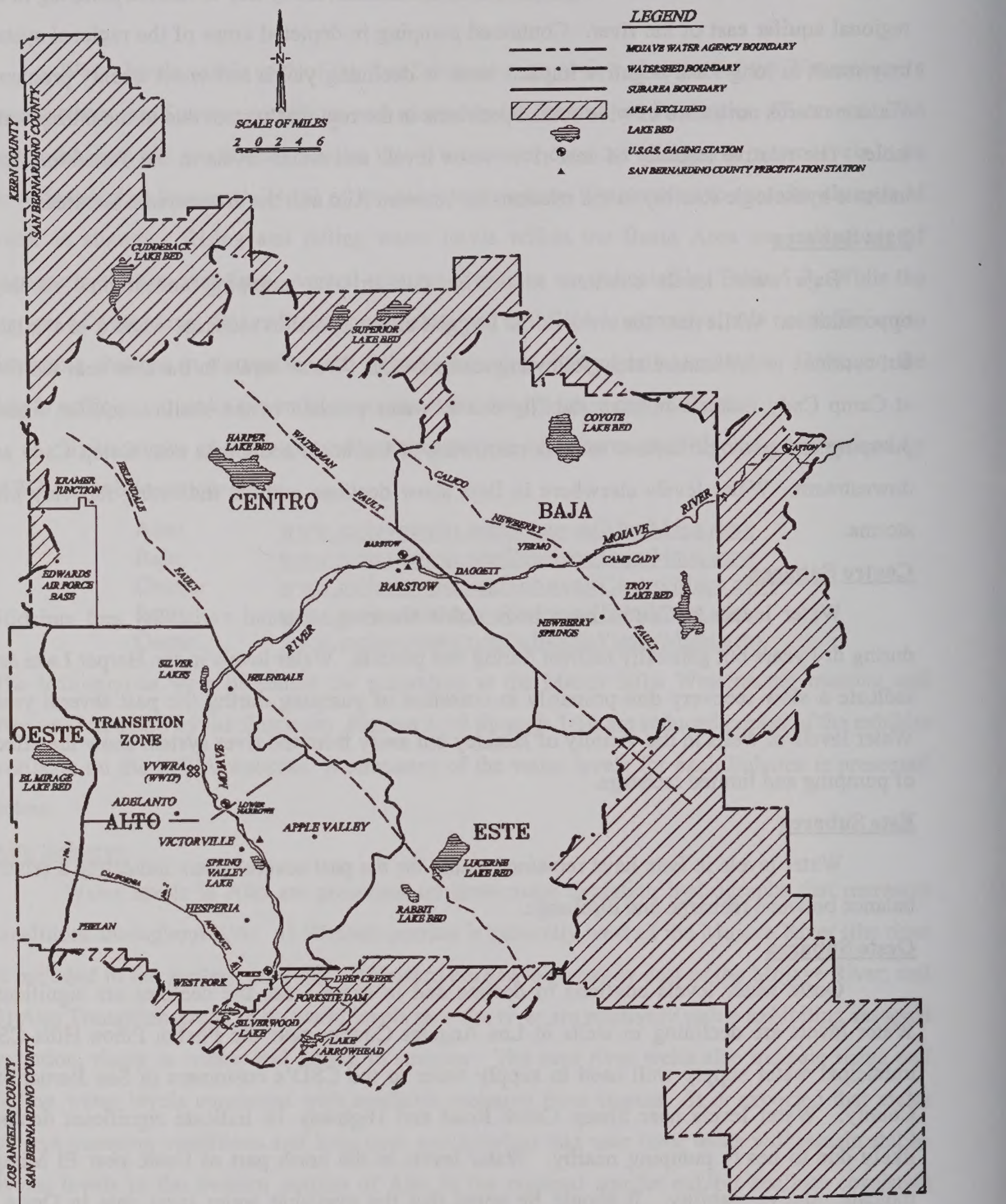
Water levels in Centro have been stable showing seasonal variability and variability during dry years but generally recover during wet periods. Water levels in the Harper Lake area indicate a slow recovery due primarily to cessation of pumping during the past several years. Water levels in wells in the vicinity of Hinkley but away from the river system show the effects of pumping and limited recharge.

Este Subarea

Water levels in Este have remained stable for the past several years indicating a relative balance between recharge and discharge.

Oeste Subarea

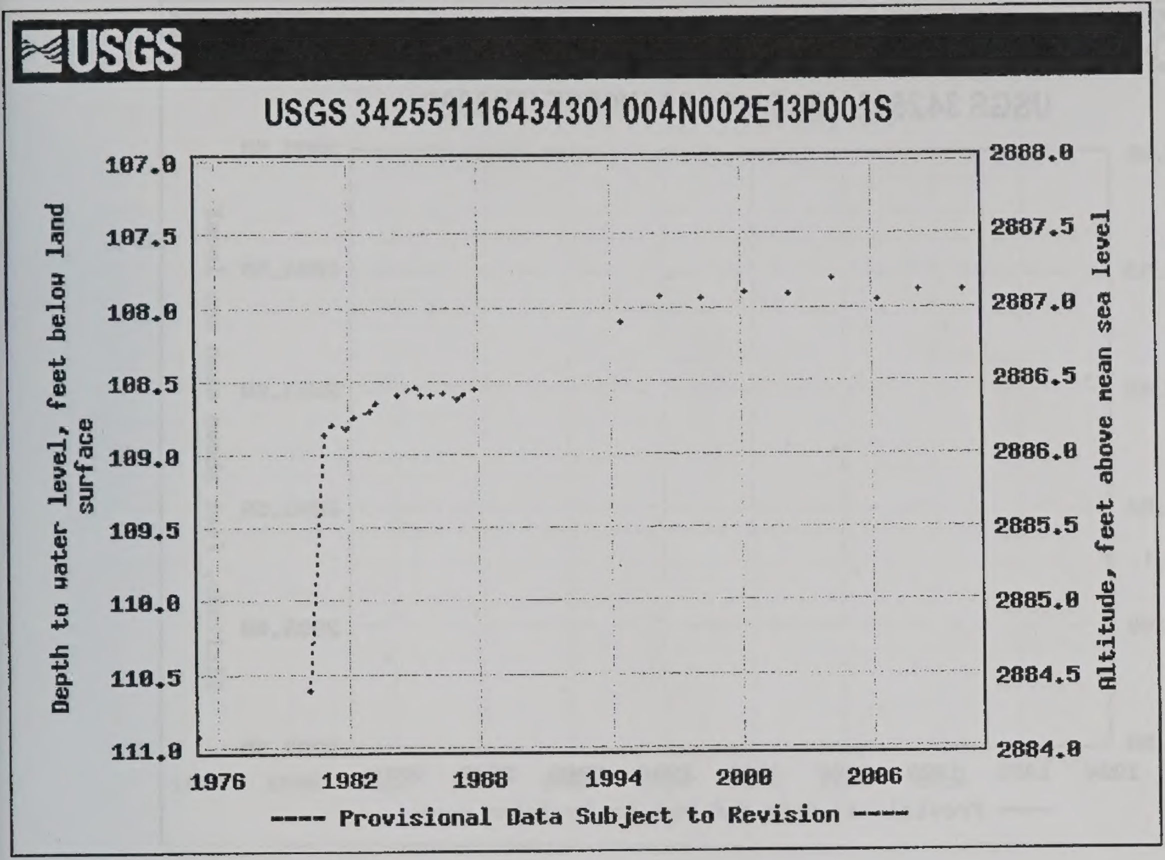
Oeste water levels continue to decline and in some areas the declines are significant. Water levels are declining in wells in Los Angeles County near the Phelan Piñon Hills CSD municipal water supply well used to supply water to the CSD's customers in San Bernardino County. Water levels near Sheep Creek Road and Highway 18 indicate significant decline, likely due to heavy pumping nearby. Water levels in the north part of Oeste near El Mirage indicate relative stability. It should be noted that the available water level data in Oeste is limited.

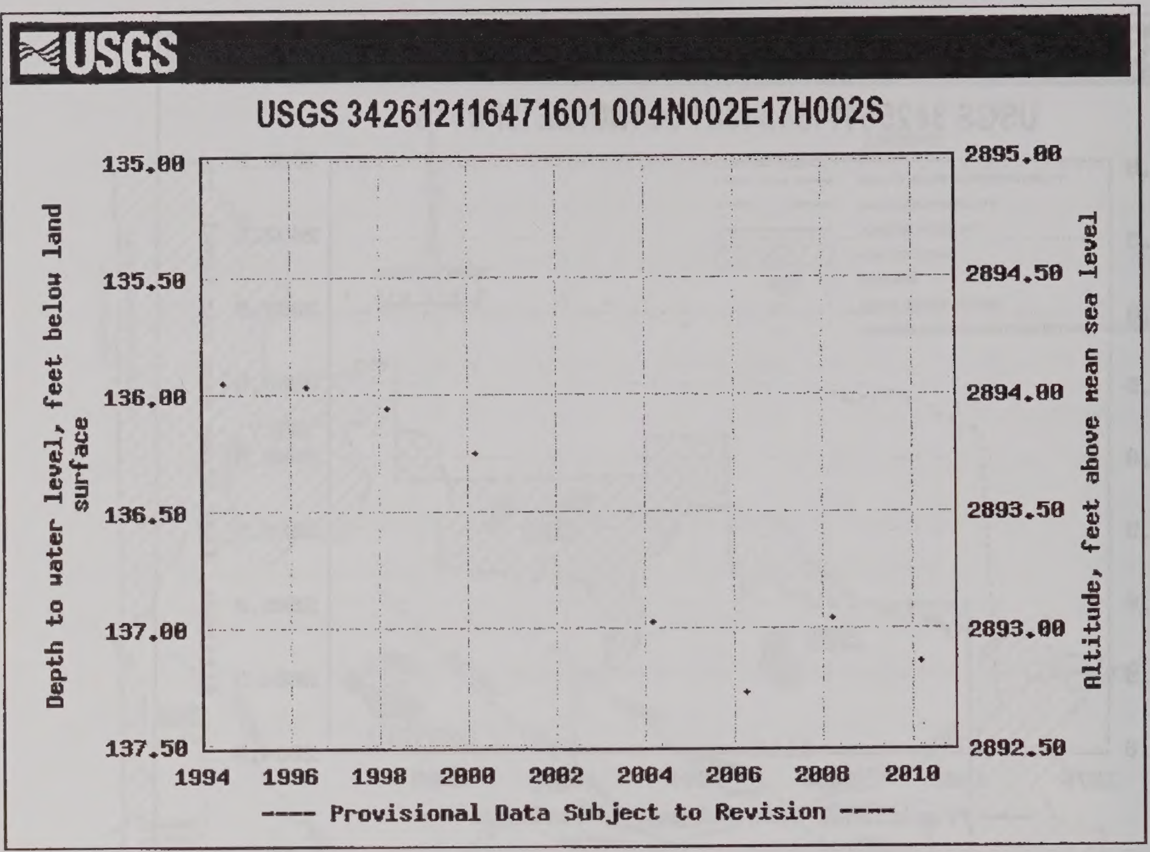


MOJAVE BASIN AREA

1/95

Attachment J - Water Level Graphs

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136.00
136.50
137.00
137.50
Altitude, feet above mean sea level
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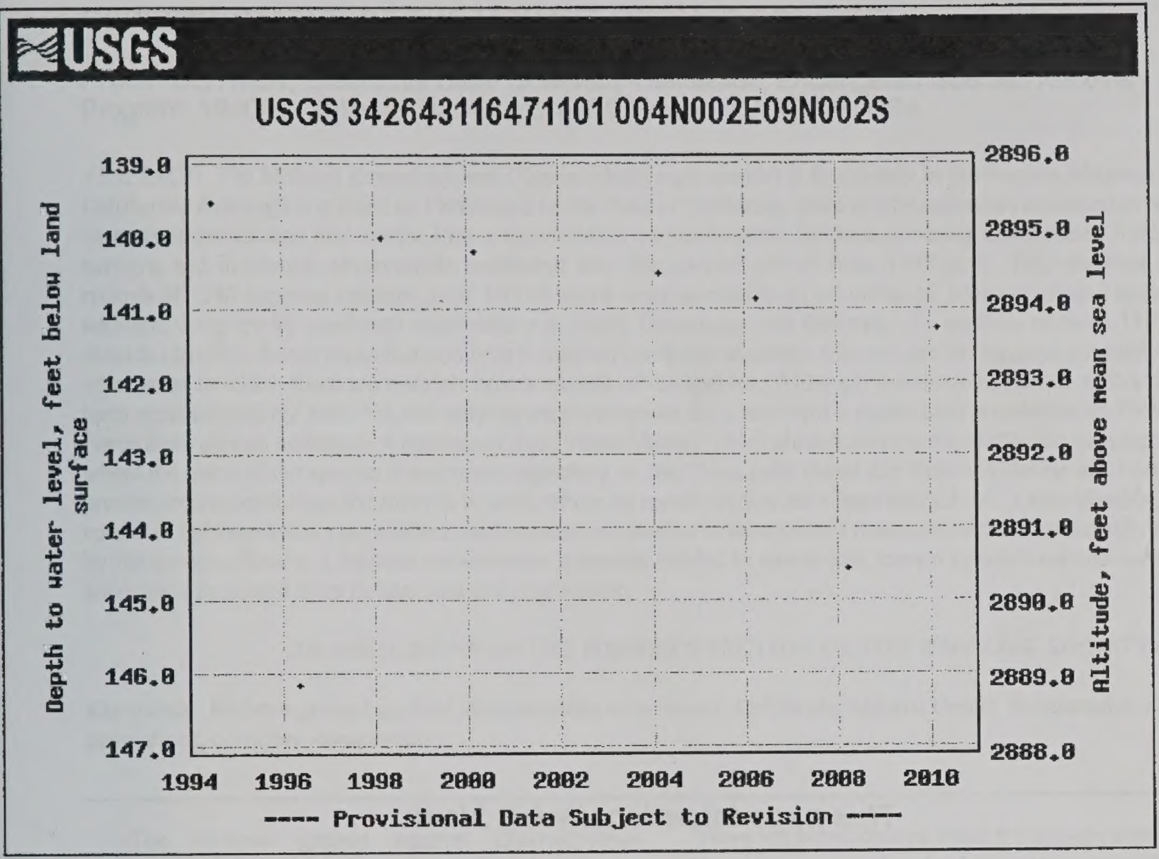
2894.50
2894.00
2893.50
2893.00
2892.50
1994
1996
1998
2000
2002
2004
2006
2008
2010
---- Provisional Data Subject to Revision ----


USGS
USGS 342643116471101 004N002E09N002S
Depth to water level, feet below land surface
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140.0
141.0
142.0
143.0
144.0
145.0
146.0
147.0
Altitude, feet above mean sea level
2896.0
2895.0
2894.0
2893.0
2892.0
2891.0
2890.0
2889.0
2888.0
1994
1996
1998
2000
2002
2004
2006
2008
2010
---- Provisional Data Subject to Revision ----

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CURRENT STATUS OF THE MOHAVE GROUND SQUIRREL

PHILIP LEITNER,[1] California State University-Stanislaus, Endangered Species Recovery Program, 1900 N. Gateway Boulevard, #101, Fresno, CA 93727, USA

ABSTRACT: The Mohave ground squirrel (*Spermophilus mohavensis*) is found only in the western Mojave Desert of California. Although it is listed as Threatened by the State of California, there is little published information regarding its current distribution and status. I have assembled a comprehensive database covering unpublished field studies, surveys, and incidental observations conducted over the 10-year period from 1998-2007. This database contains records of 1140 trapping sessions, only 102 of which were successful in capturing ≥1 Mohave ground squirrels. In addition, there are 96 incidental observations in which the species was detected. An analysis of these 198 positive records identifies 4 core areas that continue to support relatively abundant Mohave ground squirrel populations and 4 other areas in which there are multiple recent records of the species. Although the southern portion of the range has been most intensively sampled, the only recent occurrences there are from a single core population on Edwards Air Force Base plus an additional 4 detections from Victor Valley. There are extensive areas within the geographic range where the status of the species is unknown, especially on the China Lake Naval Air Weapons Station and Fort Irwin. I present recommendations for surveys in areas where no recent studies have been carried out. I also identify potential corridors between known populations and recommend studies to determine if these connections are actually occupied by the species. Finally, I indicate conservation measures needed to ensure that known populations and corridors are adequately protected from habitat loss and degradation.

TRANSACTIONS OF THE WESTERN SECTION OF THE WILDLIFE SOCIETY 44:11-29

Key words: Mohave ground squirrel, *Spermophilus mohavensis*, California, Mojave Desert, threatened species, core populations, corridors, conservation

The Mohave ground squirrel (*Spermophilus mohavensis*) is found only in the western Mojave Desert of California (Best 1995). Its historic range (Figure 1) totaled about 20,000 km^2 (Gustafson 1993). It has been found from the area of Palmdale and Victorville in the south to Owens Lake in the north. The eastern escarpment of the Sierra Nevada forms much of the western boundary of its range, while in the east its distribution extends to the Mojave River Valley and to the Fort Irwin military reservation. This region has experienced rapid growth over the past few decades. Urban development in the Antelope Valley, Indian Wells Valley, and along the Mojave River from Victorville to Barstow has resulted in a human population in excess of 700,000. Three large military bases conduct extensive training and testing operations. Much of the western Mojave Desert is used for motorized outdoor recreation, mining, and livestock grazing. There is an expanding transportation infrastructure, including highways, railroads, airports, pipelines, and electric transmission lines. Recent government policies have stimulated great interest in siting renewable energy facilities in this region, especially wind farms and solar installations.

Because of these multiple development pressures, there has been significant and on-going loss of wildlife habitat in the western Mojave Desert as well as widespread habitat degradation and fragmentation. There has been concern about the conservation status of the Mohave ground squirrel since 1971, when it was first listed as Rare under the California Endangered Species Act (CESA). After the reauthorization of CESA in 1984, the species was classified as Threatened. Its subsequent regulatory history has been highly controversial. In 1993, the California Fish and Game Commission acted to remove it from the list of threatened species, a decision that was set aside in 1997 following judicial review. A petition to list the Mohave ground squirrel under the federal Endangered Species Act (ESA) was rejected by the US Fish and Wildlife Service in 1995. The US Fish and Wildlife Service is currently (2008) reviewing a new petition to list the species as endangered under the ESA.

In 2006, the US Bureau of Land Management (BLM) approved the West Mojave Plan, which was designed to conserve a number of sensitive species throughout the western Mojave Desert, with special emphasis on the desert tortoise (*Gopherus agassizii*) and Mohave ground squirrel (Bureau of Land Management 2006). The alternative version of the plan as adopted established a Mohave Ground Squirrel Conservation Area consisting of 6,988 km^2 of public lands managed by the BLM. (Fig. 1) These conservation measures do not apply to private and military lands within the historic range of the species.

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[1] pleitner@esrp.csustan.edu

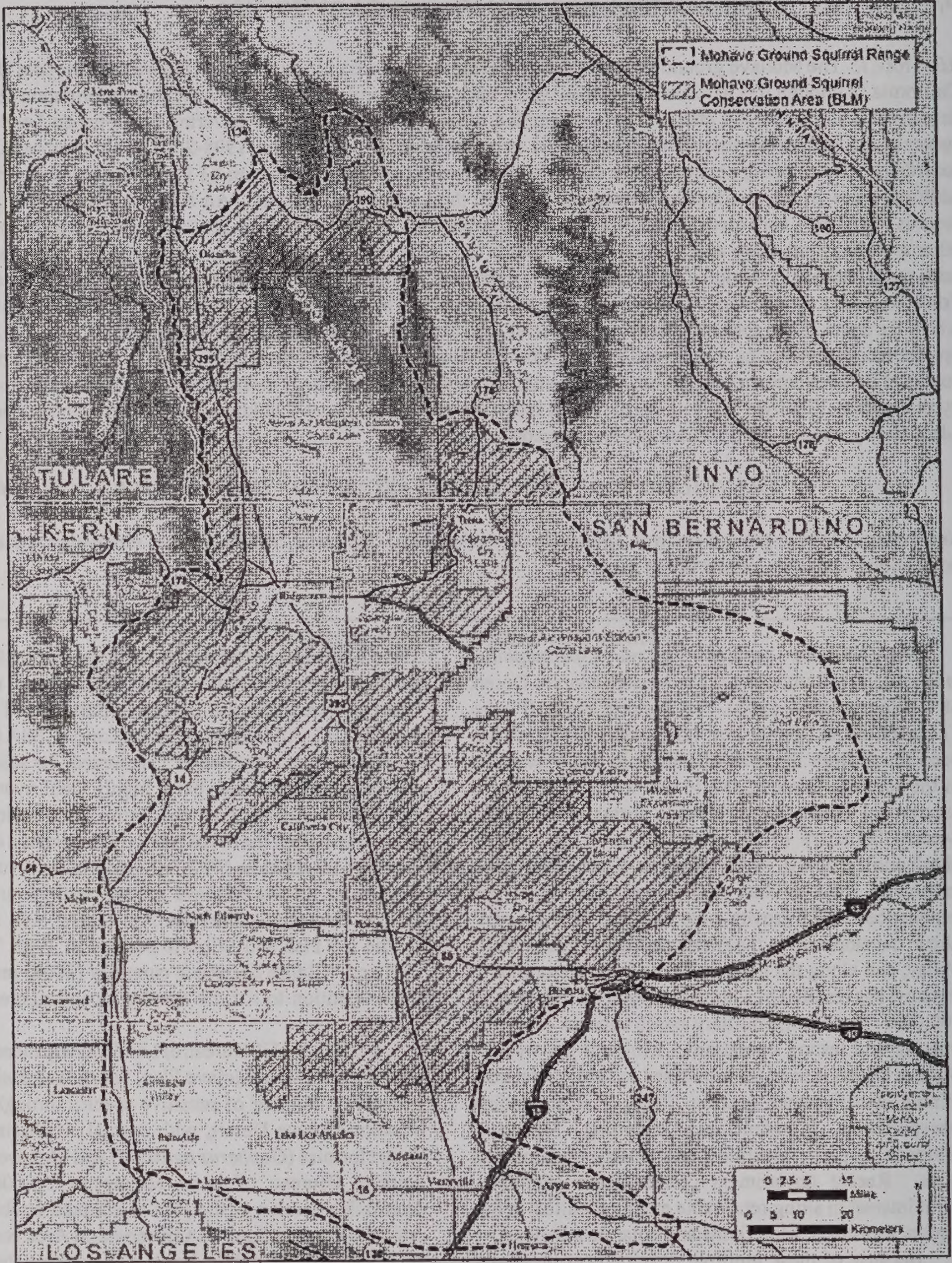

Figure 1. The historic range of the Mohave ground squirrel in the western Mojave Desert of California, with important place names indicated. The Mohave Ground Squirrel Conservation Area is shown as established in the West Mojave Plan (U.S. Bureau of Land Management (2005).

Although the Mohave ground squirrel has been designated as a state-listed species since 1971 and has been the focus of a major conservation planning effort by the BLM, there is still little published information on its distribution, abundance, and population trends. Brooks and Matchett (2002) reviewed 19 reported studies of the species, covering the period from 1918 to 2001. Only 2 of these studies were published in scientific journals. Since this review by Brooks and Matchett, a great deal of new information has become available, most of it unpublished. Two radiotelemetry studies describing home range dynamics and juvenile dispersal were recently published in peer-reviewed journals (Harris and Leitner 2004, 2005). Several state and federal agencies, as well as private conservation groups, have sponsored field research designed to determine the status of the species in particular areas. In addition, the California Department of Fish and Game (CDFG) requires trapping surveys at proposed development sites according to a prescribed protocol (CDGF 2003).

This paper brings together the data from unpublished field studies and surveys conducted during the 10-year period from 1998-2007. I have obtained reports for all sponsored research surveys and have received information on protocol trapping surveys from many consulting biologists. The information presented here includes both positive records documenting Mohave ground squirrel occurrence and negative results from trapping surveys in which the species was not detected. The objectives of this review are to:

1. Document the geographic distribution of Mohave ground squirrel occurrences,
2. Summarize the distribution and relative intensity of survey efforts,
3. Identify important areas and corridors for conservation based on available occurrence data, and
4. Recommend areas where additional survey effort is needed.

METHODS

I utilized 4 sources of information regarding the distribution and occurrence of the Mohave ground squirrel during the period 1998-2007: the California Natural Diversity Database, regional field studies, protocol trapping at proposed development sites, and incidental observations as reported by field biologists.

The California Natural Diversity Database (CNDDB) is a state-wide inventory of the status and locations of rare species and natural communities. The CDFG produces and regularly updates this computerized catalog, which contains records of occurrence submitted by state and federal agencies, consulting firms, and individual biologists. It contains positive records of occurrence only and generally does not include data documenting the absence of a species from a particular locality.

The CNDDB contained a total of 293 occurrence records for the Mohave ground squirrel as of August 4, 2007 (CNDDB 2007). Twenty-eight new occurrences were submitted during the period from 1998-2007 and there were also 2 new records at previously known locations for the species. These records were obtained from regional field studies, protocol trapping, and incidental observations. I incorporated these 30 records into the data base used in this analysis.

A number of regional field studies have been conducted during the past 10 years, many of them funded by public agencies and private conservation groups. I have reviewed 19 unpublished reports that describe the results of such trapping surveys and have also obtained data from several biologists whose surveys have not been documented in formal reports (Appendix A).

The third source of data was trapping surveys carried out at proposed development sites, as required by the CDFG (CDFG 2003). The CDFG guidelines specify that surveys be conducted on proposed project sites that support desert scrub vegetation and are within or adjacent to the Mohave ground squirrel geographic range. The surveys must be carried out by a qualified biologist operating under authority of a Memorandum of Understanding (MOU) with CDFG. The protocol mandates an initial visual survey of the project site. If no Mohave ground squirrel is detected visually, live-trapping is required for up to 3 sessions of 5 consecutive days each. The trapping sessions must be conducted during the periods March 15-April 30, May 1-31, and June 15-July 15. Trapping grids normally consist of 100 traps arranged in a 4x25 array (linear projects) or in a 10x10 array (other projects).

If a Mohave ground squirrel is detected on the site, the project proponent must apply to CDFG for an Incidental Take Permit and provide compensation, usually in the form of mitigation lands. If no Mohave ground squirrel is observed or captured, it is not necessarily evidence that the site is unoccupied or is not potential habitat. Nonetheless, CDFG will stipulate for a period of 1 year that the project site harbors no Mohave ground squirrels. Most protocol surveys carried out in recent years have not resulted in detection of the species.

In order to obtain the results of protocol trapping surveys for the period 1998-2007, I contacted all biologists who were known to possess an MOU authorizing take of Mohave ground squirrels. The great majority responded by providing their survey data, including dates of trapping sessions, coordinates of grid centers, number of trap-days of sampling effort, and whether or not Mohave ground squirrels were detected. Although I have not obtained data for all protocol trapping efforts, I have collected a total of 943 records that represent 426,615 trap-days of sampling. I estimate that I obtained records for >95% of the total protocol trapping effort for the period 1998-2007.

I have classified as incidental observations all reports by biologists who observed or captured Mohave ground squirrels incidental to other field studies. This category includes visual and auditory detections, captures made while trapping for other species, and highway mortalities.

For regional and protocol surveys, a record is defined as a single trapping session, usually consisting of 5 successive days. Records from trapping surveys can be negative, with no Mohave ground squirrel captures, or positive, indicating a session with at least 1 capture. On the other hand, records from incidental observations were always positive, indicating the detection of at least 1 Mohave ground squirrel at a specific location. Table 1 lists the number of records obtained for this review from regional surveys, protocol trapping, and incidental observations. The regional and protocol trapping surveys provided a total of 1,038 negative records, as compared to only 102 trapping sessions in which at least 1 Mohave ground squirrel was captured. Although the regional studies involved only 21.6% of the total trapping effort, they accounted for 69.6% of the positive records. On the other hand, the protocol surveys made up 78.4% of trapping effort, but contributed only 30.4% of Mohave ground squirrel detections.

Table 1. A summary of the data sources used for this review. For regional and protocol surveys, a record is defined as a single trapping session (usually 5 days) at a specific grid location. If no Mohave ground squirrels were detected, such records were considered negative, while a positive record was a trapping session in which >1 Mohave ground squirrels were captured. For incidental observations, all records are positive. Each record indicates the detection of >1 Mohave ground squirrels at a particular location. The sampling effort for regional and protocol surveys is calculated as the number of traps operated per day times the number of days per trapping session summed over all trapping sessions.

Type of Data	Total	Positive Records	Trap-days
Regional Surveys	197	71	111,710
Protocol Surveys	943	31	426,615
Incidental Observations	96	96	N/A
Totals	1,236	198	538,325

I entered data from all sources into an Excel spreadsheet and then imported that into an Access database. This permitted data to be manipulated and extracted through the query process. A series of base maps covering the geographic range of the Mohave ground squirrel was developed using Geographic Information System (GIS) techniques. All records, both positive and negative, were plotted on these digital maps for visual analysis. In this way, the distribution of Mohave ground squirrel occurrences for the last 10 years could be visualized in relation to the distribution of sampling effort.

RESULTS

General Distribution of Mohave Ground Squirrel Records

The geographic distribution of both positive and negative Mohave ground squirrel records over the period 1998-2007 is shown in Figure 2. There has been no attempt at either systematic or random range-wide sampling and the records tend to be concentrated in certain well-defined regions. The great majority of trapping effort has been conducted in the southern part of the geographic range, south of State Route 58. In spite of this very intensive sampling, Mohave ground squirrels have been detected in only 2 areas south of State Route 58, one on Edwards Air Force Base and the other in the vicinity of Victorville. The northern part of the geographic range is in Inyo County, where almost all trapping has been conducted in the Coso region on China Lake Naval Air Weapons Stations (China Lake NAWS) and in the vicinity of Olancha and Haiwee Reservoir. Outside of these 2 areas, there have been only 5 widely scattered detections in the entire northern part of the range over the past 10 years. In the central part of the range, from Ridgecrest south to State Route 58, most positive records have been concentrated in 6 distinct regions. Trapping in the vicinity of Ridgecrest has resulted in the capture of a number of Mohave ground squirrels and there are abundant records for the extensive valley (Little Dixie Wash) between Inyokern and Red Rock Canyon State Park. To the south, there is a cluster of detections associated with the Desert Tortoise Natural Area (DTNA) and another in the Pilot Knob region east of Cuddeback Dry Lake. There are many records from the broad plateau that lies north of Barstow (Coolgardie Mesa and Superior Valley) and there are also several detections in the area just north of Boron.

It is clear that there are extensive areas within the range of the Mohave ground squirrel that have not been

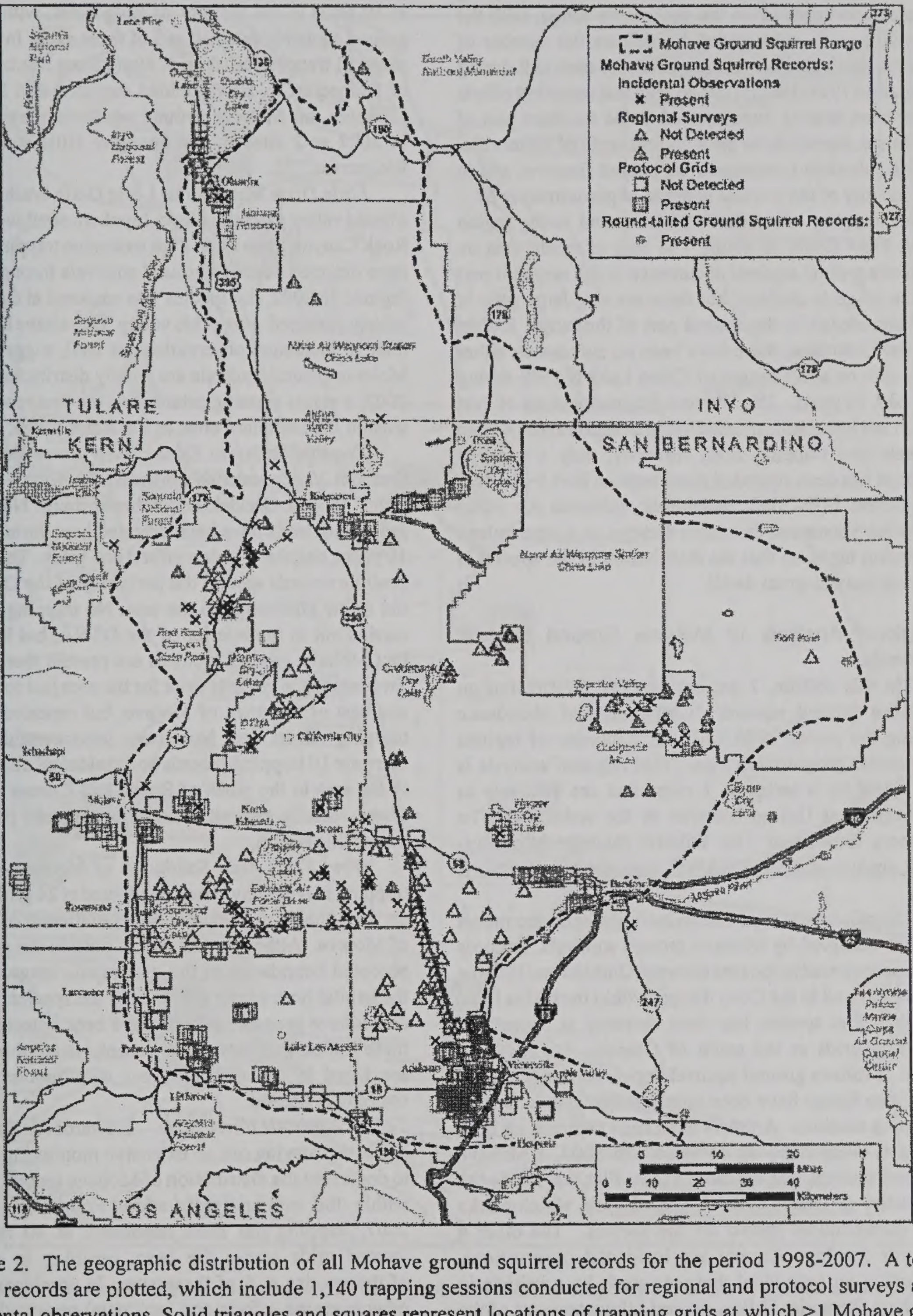

Figure 2. The geographic distribution of all Mohave ground squirrel records for the period 1998-2007. A total of 1,236 records are plotted, which include 1,140 trapping sessions conducted for regional and protocol surveys and 96 incidental observations. Solid triangles and squares represent locations of trapping grids at which >1 Mohave ground squirrels were captured. Crosses show sites of the 96 incidental observations at which >1 Mohave ground squirrels were detected.

effectively sampled. Figure 3 shows a 10x10 km sampling frame superimposed on the geographic range, with the sampling units color-coded to indicate the number of records (both positive and negative) for each unit during the period 1998-2007. It can be seen that sampling efforts have been heavily concentrated in the southern part of the range, especially to the west and north of Victorville, in the Palmdale-Lancaster area, around Barstow, and in the vicinity of the town of Mojave. Approximately 67 of all trapping efforts have been located in the region from State Route 58 south. The lack of recent data on Mohave ground squirrel occurrence in the northern part of the range is obvious, but there are also large gaps in our knowledge in the central part of the range. Except for the Coso area, there have been no surveys on either the north or south ranges of China Lake NAWS during the past 10 years. The Western Expansion Area of Fort Irwin has been well sampled using a randomized method of selecting trapping sites. However, only 1 trapping attempt has been recorded elsewhere on Fort Irwin over the period 1998-2007. In contrast, Edwards Air Force Base has sponsored extensive surveys on a randomized sampling basis, so that the distribution of the species is known there in great detail.

Regional Analysis of Mohave Ground Squirrel Records

In this section, I present detailed information on Mohave ground squirrel distribution and abundance during the period 1998-2007 for a number of regions within the geographic range. This regional analysis is supported by a series of 7 maps that are available as Supplemental Online Material at the website of The Western Section of The Wildlife Society: http://tws-west.org/transactions/TWSWS_Transactions_directory.htm

Inyo County.—Inyo County includes the northernmost region occupied by Mohave ground squirrels. Records are concentrated in the area between Olancha and Haiwee Reservoir and in the Coso Range, within the China Lake NAWS. The species has been detected at 5 protocol trapping grids to the south of Olancha, beginning in 2002. Mohave ground squirrel populations at 2 sites in the Coso Range have been monitored by regular spring trapping sessions. Animals have been captured on both grids at every trapping occasion. In 2007, a Mohave ground squirrel was captured at Lee Flat just inside the boundary of Death Valley National Park, which marks the northernmost record for the species. The other 4 records for Inyo County are incidental observations, including an individual that was stuck by a vehicle in northern Panamint Valley, several kilometers east of the generally-accepted limits of the range.

Ridgecrest Area.—Trapping has been conducted at 10 grids in the vicinity of Ridgecrest, with Mohave ground squirrels detected at 5 of these sites. In addition, protocol trapping at 10 grids along State Route 178 east of Ridgecrest in 2006 yielded captures at 6 locations. However, no Mohave ground squirrels were captured in 2002 at 2 sites in the Spangler Hills southeast of Ridgecrest.

Little Dixie Wash.—The Little Dixie Wash region is a broad valley extending from Inyokern southwest to Red Rock Canyon State Park. Two extensive trapping studies have detected Mohave ground squirrels throughout this region. In 2002, the species was captured at 6 of 7 grids widely scattered across this valley. There have been more than 20 incidental observations as well, suggesting that Mohave ground squirrels are widely distributed here. In 2007, a visual sighting established the first record to the west of the mountain crest in the Kelso Creek drainage.

Fremont Valley to Edwards Air Force Base.—The Fremont Valley extends northeast from the vicinity of Cantil toward Garlock and Johannesburg. No Mohave ground squirrels have been detected here during the past 10 years, despite trapping efforts at 6 grids. There are 13 positive records around the periphery of the DTNA and out a few kilometers to the east. No trapping has been carried out in the interior of the DTNA, but it is likely that Mohave ground squirrels are present there as well. Two incidental records exist for the area just to the north and east of the town of Mojave, but repeated protocol trapping efforts here have been unsuccessful. Finally, there are 10 trapping records and incidental observations in the area to the north of Boron and Kramer Junction. These records suggest a fairly widespread population across this region.

Wind Farm Area Southwest of Mojave.—Protocol trapping surveys have been conducted at 24 grids located on wind energy development sites southwest of the town of Mojave. Although this area is outside the generally-accepted boundaries of the geographic range, much of the habitat here seems suitable for the species. To date, no Mohave ground squirrels have been detected during these trapping efforts. Two recent visual observations are listed in the CNDDB, but confirmation through trapping is needed.

Edwards Air Force Base.—Edwards Air Force Base has been carrying out an extensive monitoring program to document the distribution of Mohave ground squirrels within the military reservation. From 2003 through 2007, trapping has been conducted at 40 randomly-located grids across the base, resulting in detection of the species at 6 of these sites. In combination with other trapping efforts and incidental observations, this program has clearly defined the area in which Mohave ground squirrel populations are present.

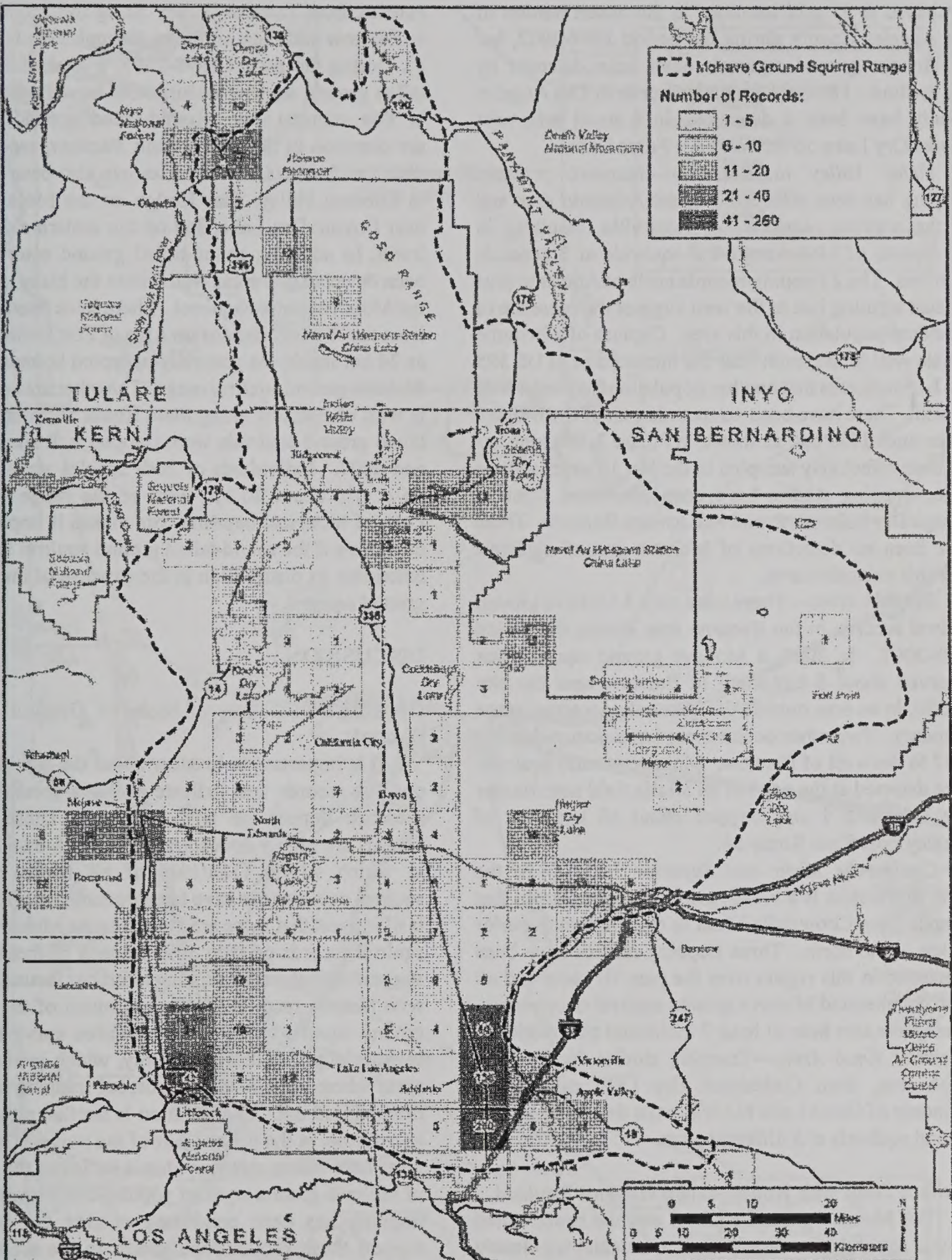

Figure 3. The distribution of sampling effort throughout the historic range of the Mohave ground squirrel for the period 1998-2007. A 10 x 10 kilometer sampling frame is set over the region and the total number of records (both positive and negative) are indicated for each 10 x 10 km block. These records are the trapping sessions conducted for regional and protocol surveys. Incidental observations are not plotted here.

Los Angeles County.—Protocol trapping has been conducted at 52 grid locations in the desert portion of Los Angeles County during the period 1998-2007, but no Mohave ground squirrels have been detected by this method. The only positive records in Los Angeles County have been 4 detections in a small area near Rogers Dry Lake on Edwards Air Force Base.

Victor Valley to Barstow.—Intensive protocol trapping has been conducted in the Adelanto area and on the western outskirts of Victorville, resulting in the capture of Mohave ground squirrels at 3 separate locations. The 2 trapping records north of Adelanto plus a visual sighting just to the west suggest the presence of a residual population in this area. Capture of a juvenile female well to the south near the intersection of US 395 and I-15 indicates that another population may exist here as well. There have been no records east of the Mojave River since 1955 but, as shown in Figure 2, this area has not been effectively sampled in the last 10 years. Three major trapping studies have been conducted from El Mirage Dry Lake north and east toward Barstow. There have been no detections of Mohave ground squirrels over this extensive area.

Barstow Area.—There were only 3 Mohave ground squirrel records in the Barstow area during the period 1998-2007. In 2005, a Mohave ground squirrel was observed about 6 km south of Barstow near the city landfill, in an area outside the generally-accepted range boundary. Two other occurrences were documented in 2007 to the west of Barstow. Mohave ground squirrels were detected at the edge of an alfalfa field near Harper Dry Lake and 1 was trapped about 10 km west of Hinkley near State Route 58.

Coolgardie Mesa and Superior Valley.—To the north of Barstow is a broad, gently-sloping plateau that extends from Coolgardie Mesa in the south to Superior Valley in the north. Three trapping studies have been conducted in this region over the past 10 years and all have documented Mohave ground squirrel occurrences. There have also been at least 7 incidental observations.

Pilot Knob Area.—Trapping studies in the Pilot Knob area, from Cuddeback Dry Lake east to the boundary of China Lake NAWS, have detected Mohave ground squirrels at 5 different sites.

Contact Zone with Round-tailed Ground Squirrel

The Mohave ground squirrel and the round-tailed ground squirrel (*Spermophilus tereticaudus*) are closely related (Hafner and Yates 1983). The 2 species are very similar in general appearance, the most obvious difference being the much longer tail of the round-tailed ground squirrel. The round-tailed ground squirrel is found throughout the eastern Mojave Desert of California and its geographic range adjoins that of the Mohave ground squirrel. The contact zone between the 2 species extends from Lucerne Valley along the Mojave River to Barstow and then northeast through Fort Irwin (Fig. 4). During the period 1998-2007, a total of 30 round-tailed ground squirrel occurrences have been recorded in this contact zone. Round-tailed ground squirrels are common in the area around Barstow, especially in disturbed habitats. The species has also been observed in Lucerne Valley, near Hodge on the Mojave River, near Coyote Dry Lake, and on the eastern side of Fort Irwin. In addition, round-tailed ground squirrels have been detected in 2 areas well within the historic range of the Mohave ground squirrel. There have been 5 reports from the Western Expansion Area of Fort Irwin, as much as 24 km inside the generally-accepted boundary of the Mohave ground squirrel range. The other area of interest is west of Barstow along State Route 58, where round-tailed ground squirrels were trapped at 8 sites in 2006 and 2007. Individuals of both species were captured on a grid about 20 km west of the range boundary. Lack of historical baseline data makes it impossible to determine if the round-tailed ground squirrel is actively extending its distribution at the expense of the Mohave ground squirrel.

DISCUSSION

General Distribution of Mohave Ground Squirrel Records

It is important to be clear about the significance of positive records that indicate Mohave ground squirrel presence during the past 10 years. These positive records are highly concentrated in just 8 distinct areas, in which 93.4% (185/198) of all Mohave ground squirrel occurrences have been documented (Fig. 5). It is of interest that there are at least some Mohave ground squirrel records prior to 1998 in each of these 8 areas, suggesting that recent trapping effort has focused on areas with historic records. However, much of the Mohave ground squirrel range has never been surveyed. This is especially true in Inyo County, which includes large areas where no surveys or protocol trapping have ever been carried out. The situation is similar, although not as extreme, in the central part of the range. There are 6 areas here where recent evidence indicates the presence of Mohave ground squirrel populations. However, little trapping has been conducted outside the areas that support these known populations. In the southern part of the range, south of State Route 58, there has been much greater trapping effort and the sampling has been much more widely distributed. Even here, there are still a few relatively restricted areas that have not been surveyed since 1998. In all 3 sections of the Mohave ground squirrel range, additional populations may well

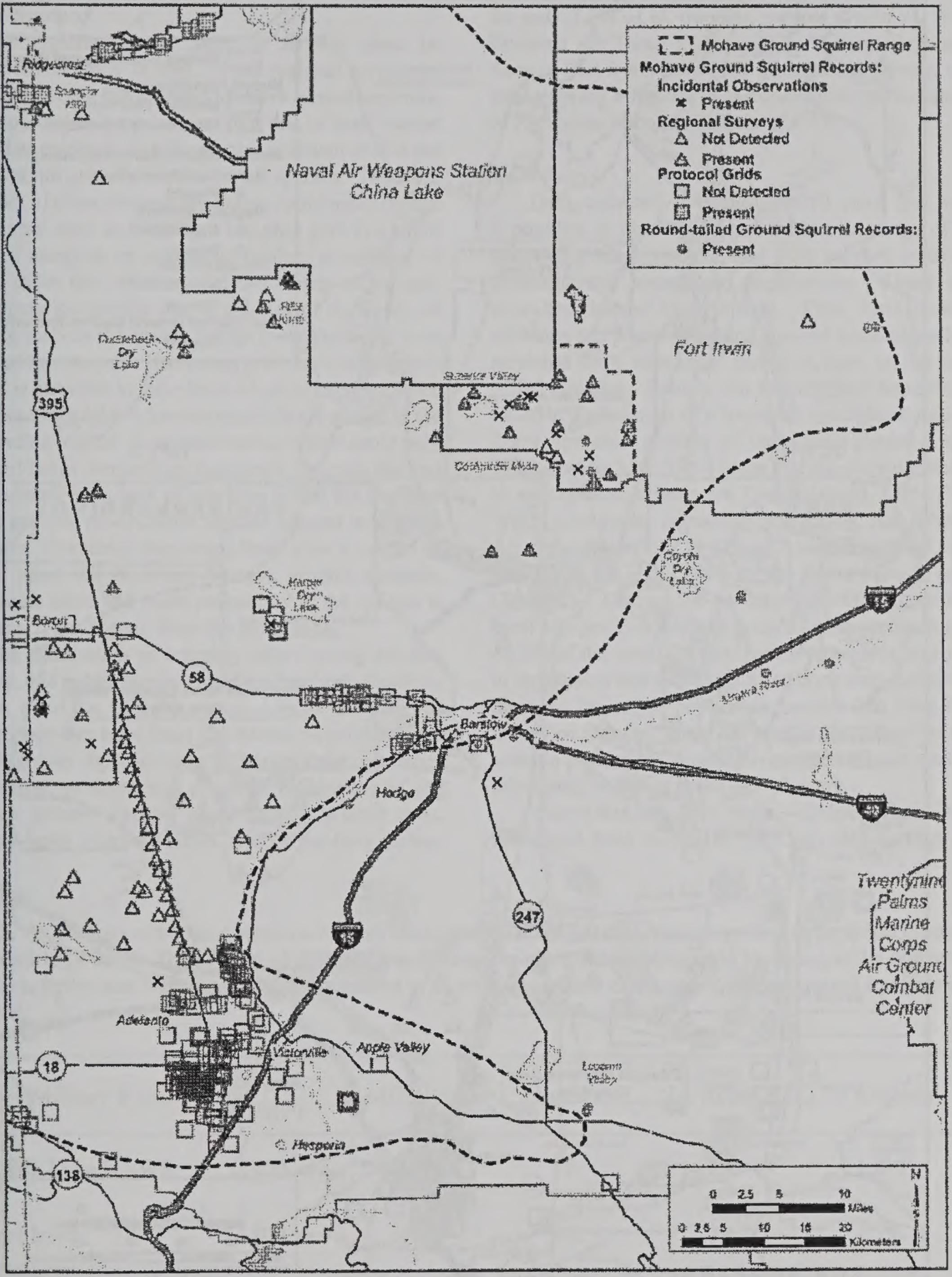

Figure 4. The contact zone between the Mohave ground squirrel and the round-tailed ground squirrel. This shows the distribution of trapping sessions conducted for regional and protocol surveys, as well as incidental observations of Mohave ground squirrels. Circles show sites where round-tailed ground squirrels have observed or captured. These data cover the period 1998-2007.

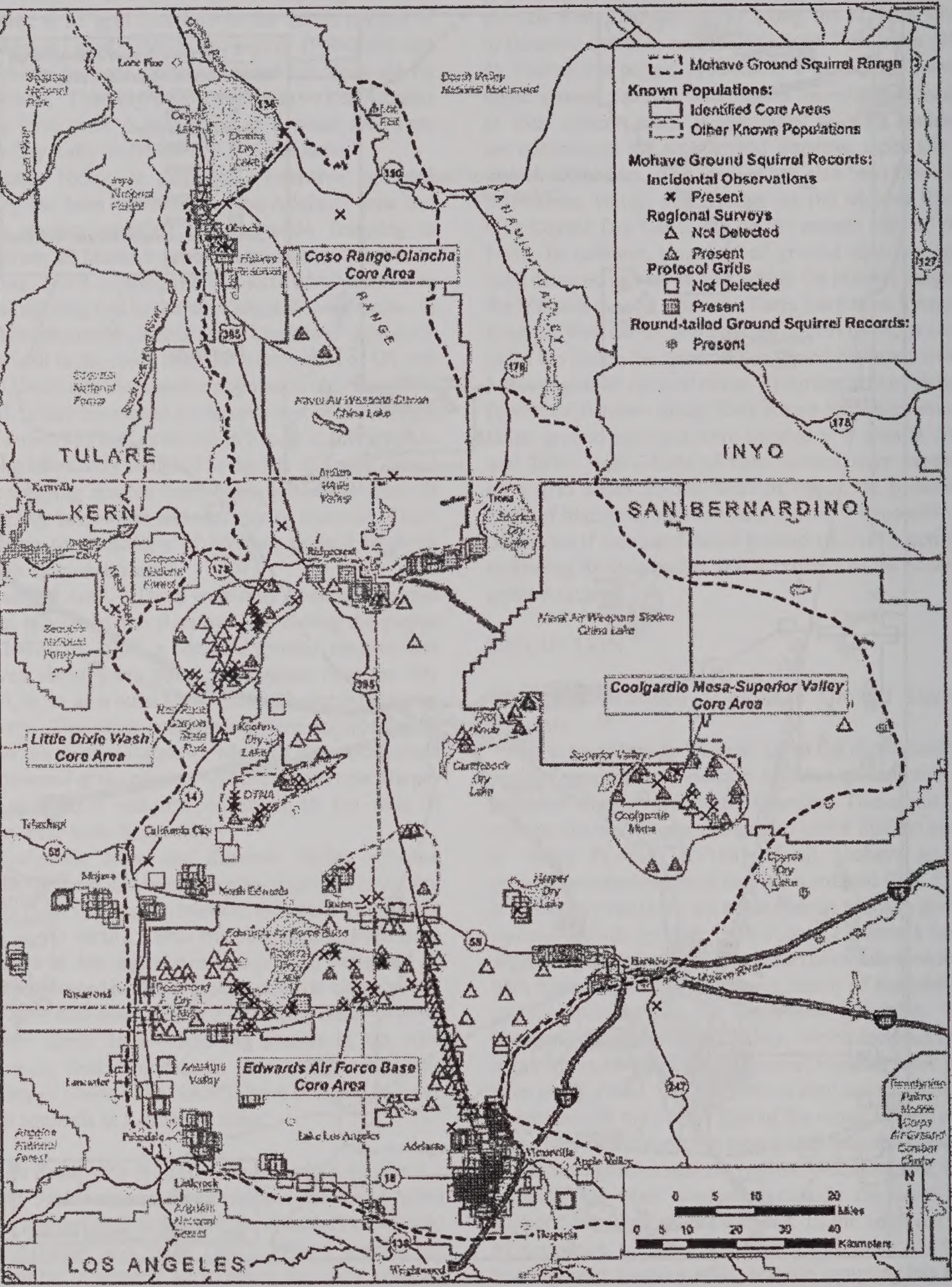

Figure 5. The geographic locations of currently known Mohave ground squirrel populations, including 4 identified core populations and 4 other populations.

exist outside the 8 areas in which recent positive records are concentrated.

The significance of negative records must be interpreted carefully as well. When regional surveys or protocol trapping fail to detect Mohave ground squirrels, it is important to keep in mind that this in itself cannot be used as evidence that the species is absent or that the area does not provide habitat for the species. There are a number of other circumstances that could result in lack of captures, such as locating a trapping grid in a small patch of marginal or unsuitable habitat, abundance of natural foods that reduce the attractiveness of the bait, low population density due to a series of dry years, or trapping early in the season before juveniles begin their dispersal movements. If trapping grids are not randomly sited, it is not valid to infer from a lack of captures at the grid sites that Mohave ground squirrels are absent in the surrounding habitat. Any conclusions would apply only to the grid sites themselves. In general, the most that can be concluded from lack of captures is that the negative results provide no evidence that the species is present. However, if repeated trapping efforts over a period of several years fail to detect Mohave ground squirrels, it becomes more and more probable that the species is very rare, if not absent, from the study area.

The distribution of trapping effort among private, military, and public land ownerships has been distinctly uneven over the past 10 years. Almost all protocol trapping surveys have been conducted on private lands or on highway rights-of-way, because of the regulatory requirement to determine presence or absence of the Mohave ground squirrel on proposed project sites. Military lands make up about 37% of the land surface within the range boundaries, but have been the locations for only 7.4% of all trapping records (Table 2). While Edwards Air Force Base and the Western Expansion Area of Fort Irwin have been sampled intensively, very little trapping effort has been expended on the remainder of Fort Irwin or on China Lake NAWS.

Core Areas

Data collected over the past 10 years has made it possible to identify 4 areas within the range of the Mohave ground squirrel that still support relatively abundant and widespread populations. These core areas are defined by 3 criteria. First, there must be evidence that Mohave ground squirrel populations have persisted for a substantial period of time, on the order of 2-3 decades. Second, the species must be currently found at a minimum of 6 locations throughout the area. Third, the total number of individuals detected since 1998 must be $\geq$30. The 4 areas that are currently known to satisfy these criteria are Coso/Olancha, Little Dixie Wash, Coolgardie Mesa/Superior Valley, and Edwards Air Force Base (Fig. 5). These 4 core areas total about 1,672 km^2, or about 8.4% of the entire historic range (Table 3). During the period 1998-2007, there have been 135 positive records in core areas, accounting for 68.2% of the total 198 positive records. It is important to emphasize that these identified core areas are simply the only important population centers that have been identified thus far. There are very likely to be other core areas in parts of the geographic range that have not been adequately sampled in the last 10 years.

Coso/Olancha Core Area.—China Lake NAWS sponsored field studies of the Coso Hot Springs area

Table 2. An analysis of trapping effort on military lands within the range of the Mohave ground squirrel (MGS) during the period 1998-2007. The number of sites refers to the number of distinct trapping grid locations, while the number of records is the total number of trapping sessions at all sites, regardless of whether Mohave ground squirrels were captured.

Military Base	Area (km^2)	% MGS Range	No. Sites	No. Records	% Records
China Lake NAWS	4400	22%	2	20	1.8%
Fort Irwin	1800	9%	18	19	1.7%
Edwards AFB	1200	6%	43	43	3.9%
Totals	7400	37%	63	82	7.4%

in 1978 that detected 35 Mohave ground squirrels at a number of sites through trapping and visual observations (Zembal and Gall 1980). In the following year, trapping was carried out at 8 sites throughout the Coso Range and in Rose Valley to the west (Leitner 1980). A total of 124 individual Mohave ground squirrels were captured at 7 of the 8 trapping grids. A monitoring program in the Coso Range and Rose Valley from 1988 through 1996 resulted in the capture of over 1400 juvenile and adult Mohave ground squirrels (Leitner and Leitner 1998). Aardahl and Roush (1985) failed to trap the species at a site near Olancha in 1980, but did observe several individuals in the same general area.

During each of the past 7 years (2001-2007), Mohave ground squirrels have been trapped at 2 permanent grids in the Coso Range (Leitner 2001, 2006, 2008). A total of 89 adults have been captured over this period. The species has also been detected regularly in the Olancha area, where 29 adult captures were recorded at 5 sites from 2002 to 2005. The Coso/Olancha area clearly qualifies as an important core area, based upon the persistence of Mohave ground squirrel populations here for 30 years, the presence of the species at many sites, and the number of animals detected.

Little Dixie Wash Core Area.—Mohave ground squirrels were first recorded in the Little Dixie Wash region in 1931 and 1932, when specimens were collected at Freeman Junction and on the east side of Walker Pass (CNDDB Occ. #21 and #52). Trapping surveys by the BLM in 1974 and 1975 resulted in 17 captures at 7 localities in Dove Springs Canyon and Bird Spring Canyon (CNDDB Occ. #84, #174, #175, and #191-194). Aardahl and Roush (1985) reported capturing a total of 94 individuals (both adults and juveniles) at 6 grids in the Little Dixie Wash area from April-July 1980. Finally, trapping at 2 sites in 1994 yielded a total of 12 Mohave ground squirrels (Scarry et al. 1996). Additional occurrences were documented at 10 other locations in this region during the period 1974-1990. Thus, Mohave ground squirrels were recorded at 27 locations in the Little Dixie Wash area from 1931 through 1996.

Recent field studies have been conducted in the Little Dixie Wash area during the period 2002-2007. In 2002, a total of 19 adult Mohave ground squirrels were captured at 6 of 7 grid locations (Leitner 2008). This was followed by more intensive studies at the Freeman Gulch site, with a total of 108 adults and 101 juveniles recorded from 2003 through 2007. Pit-fall trapping for reptiles in the Dove Springs Open Area resulted in the incidental capture of 6 Mohave ground squirrels at 4 different locations. Finally, a trapping survey in 2007 yielded 7 adults at 4 grids near the northern boundary of Red Rock Canyon State Park (Leitner 2008). The Little Dixie Wash core area has supported Mohave ground squirrel populations for over 70 years and recent records confirm that the species is abundant and widespread here.

Coolgardie Mesa/Superior Valley Core Area.—Mohave ground squirrels were first discovered in 1977 north of Barstow on the plateau that stretches from Coolgardie Mesa north to Superior Valley (Wessman 1977). The species was detected at 9 locations, with 1-3 individuals reported at each site. In 1980, Aardahl and Roush (1985) trapped 2 grids in Superior Valley, capturing 24 individuals (both adults and juveniles). A total of 24 Mohave ground squirrels were subsequently recorded at 5 sites in 1981 and 1982 (CNDDB Occ. #206-210). In 1994, 4 individuals were captured at 2 trapping grids in this area (Scarry et al. 1996).

Two recent surveys have been carried out in the Coolgardie Mesa/Superior Valley area. Trapping at 4 sites in 2002 yielded Mohave ground squirrel captures at each location for a total of 14 adults. A more extensive survey of the Western Expansion Area of Fort Irwin in 2006 and 2007 resulted in 36 individuals captured at 10 of 12 trapping grids. There is clear evidence that Mohave ground squirrels have persisted here for at

Table 3. The estimated sizes of the 4 identified core areas, as measured in square kilometers and in acres. The number of positive Mohave ground squirrel records for the period 1998-2007 is given for each core area.

Core Area Name	Area (km²)	Area (acres)	Number of Positive Records
Coso / Olancha	452	111,690	33
Little Dixie Wash	393	97,172	44
Coolgardie Mesa / Superior Valley	516	127,450	23
Edwards Air Force Base	311	76,761	35

least 30 years. Recent surveys have documented that the species was present at 14 of 16 trapping sites and in several cases a substantial number of individuals was captured. This core area is at the eastern edge of the range and several captures or observations of animals that appear to be round-tailed ground squirrels have been recorded here. The potential for hybridization in this area between these 2 closely related species should be carefully investigated.

Edwards Air Force Base Core Area.—A number of surveys have documented the past occurrence of Mohave ground squirrels on Edwards Air Force Base, with most records located to the north, east, and south of Rogers Dry Lake. The earliest observations were made during the period 1973-1977 in the area south of Rogers Dry Lake (CNDDB Occ. #265). Seventeen Mohave ground squirrels were trapped in 1988 at 3 sites northeast of Rogers Dry Lake (ERC Environmental and Energy Services Company 1989). Additional trapping in 1993 in this same area resulted in captures of many adults and juveniles (Deal et al. 1993, Mitchell et al. 1993). Surveys at Mt. Mesa to the southeast of Rogers Dry Lake yielded 9 Mohave ground squirrels in 1992 (U.S. Fish & Wildlife Service 1993) and over 30 individuals in 1993 (Deal et al. 1993, Mitchell et al. 1993). A total of 13 Mohave ground squirrels were trapped in 1994 at 4 sites in halophytic saltbush scrub to the south and southwest of Rogers Dry Lake (Buescher et al. 1995). The species was recorded at 4 additional locations to the east of Rogers Dry Lake during the period 1981-1991.

Recent field studies have clearly delineated a core area on Edwards Air Force Base, with all Mohave ground squirrel records since 2000 localized to the east and south of Rogers Dry Lake. Trapping surveys were conducted at 19 grids in this area during the period 2000-2005, with a total of 29 adults and 4 juveniles captured at 8 of the study sites (Vanherweg 2000, Leitner 2003, Air Force Field Test Center 2004 and 2005, Leitner 2008). Although no captures were recorded at the 8 grids south of Rogers Dry Lake in 2005, Mohave ground squirrels are known to be present here, based upon 6 incidental observations. Mohave ground squirrel populations have been known in this core area for over 30 years and the large numbers of recent records demonstrate that the species is still well-distributed here. To date, this is the only core area known to exist in the southern part of the range.

Connectivity between Core Areas

The 4 core areas are isolated from each other by distances ranging from 48-80 km. It will be an important conservation goal to ensure sufficient connectivity between them to allow gene flow. Figure 6 shows the locations of the core areas with possible habitat corridors illustrated.

The potential corridor between the Coso/Olancha core area and Little Dixie Wash follows a narrow strip of public land between the Sierra escarpment and the boundary of China Lake NAWS. It is not clear that this corridor is effective because of its minimal width (1-4 km) and because there is no firm evidence that it is currently occupied. There may well be an alternative corridor through China Lake NAWS, but the U.S. Navy cannot guarantee permanent protection and, again, there is no proof that continuous Mohave ground squirrel populations exist here.

Connectivity between the Little Dixie Wash core area and Edwards Air Force Base is most likely to be achieved by protection of a north-south habitat corridor along US Highway 395. This linkage appears to provide the highest quality habitat connection between these 2 core areas. It would also help to provide connectivity among other known populations in the Ridgecrest area, the DTNA, Pilot Knob, and the Boron region. There are no recent Mohave ground squirrel records along much of this corridor, so it is not clear that it is currently occupied.

The most effective corridor linking the Coolgardie Mesa/Superior Valley core area with other populations is probably thorough the Pilot Knob region. This connection is relatively short and crosses apparently good quality habitat. Although the most direct route is across a corner of the China Lake NAWS, public lands just to the south could also provide connectivity. An alternative linkage would be to the southwest toward Edwards Air Force Base across the broad valley centered on Harper Dry Lake. However, this route is lower in elevation, receives less rainfall, and habitat here is of lesser quality.

The lack of data concerning the existence or status of Mohave ground squirrel populations in these potential corridors is a serious problem. While these routes may seem geographically appropriate in providing linkages between populations, it will be important to conduct field studies to determine whether or not they are actually occupied.

MANAGEMENT RECOMMENDATIONS

The database of Mohave ground squirrel records that has been assembled for this analysis should be maintained by CDFG or another suitable public agency and made available for on-line access by interested researchers, agency staff, consultants, and conservation organizations. An interactive mapping system should be developed in conjunction with the database, so that

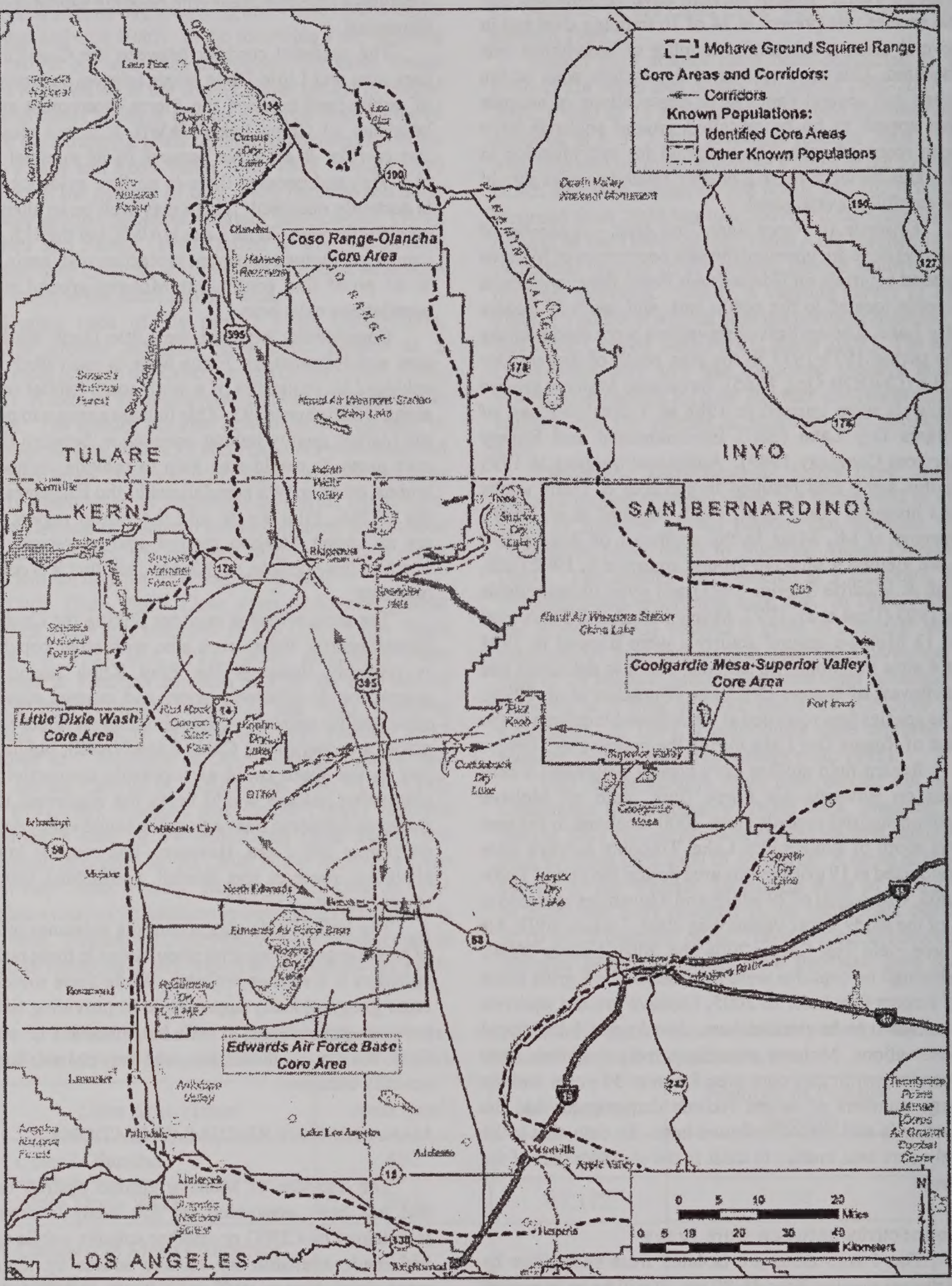

Figure 6. Map of potential habitat corridors that may provide connectivity between identified core areas and other known Mohave ground squirrel populations.

users could obtain map displays of areas of interest. As recommended by Brooks and Matchett (2002), a system should be developed to collect both positive and negative data on a continuing basis from biologists, agency staff, and consultants. It would be desirable to issue an annual report with appropriate maps to provide updated information on Mohave ground squirrel occurrences.

It is clear that additional field surveys are urgently needed to provide a more comprehensive picture of Mohave ground squirrel occurrence and status throughout its range. It is also clear that surveys to date have been seriously inadequate in documenting patterns of Mohave ground squirrel distribution because trapping sites have for the most part not been selected according to a randomized scheme. In the absence of a randomized sampling procedure, the results of such surveys apply only to the trapping site and cannot be extrapolated to the general region. It is recommended that a range-wide survey be conducted, with sampling locations determined on a randomized basis. Since this would be an expensive and logistically difficult undertaking, it may be more realistic to develop a survey plan that could be implemented gradually over several years as funding becomes available. The first step could be to establish a sampling frame covering the entire Mohave ground squirrel range, with the area divided into sampling units, perhaps 10 x 10 km or smaller. When a survey is planned for a particular region, trapping grids could be sited in sampling units chosen at random. This system would be quite flexible, since it could be implemented at different scales as appropriate for the purposes of the sponsoring organization. It is recommended that the Mohave Ground Squirrel Technical Advisory Group develop such a range-wide randomized sampling plan and submit it to the CDFG, BLM, and military installations for consideration.

It appears to be of critical importance to acquire more data concerning the status of the species in the northern and central parts of its range (Fig. 7). Surveys should be carried out on both the north and south ranges of China Lake NAWS, on Fort Irwin, and along the corridor north from EAFB to Ridgecrest. There has

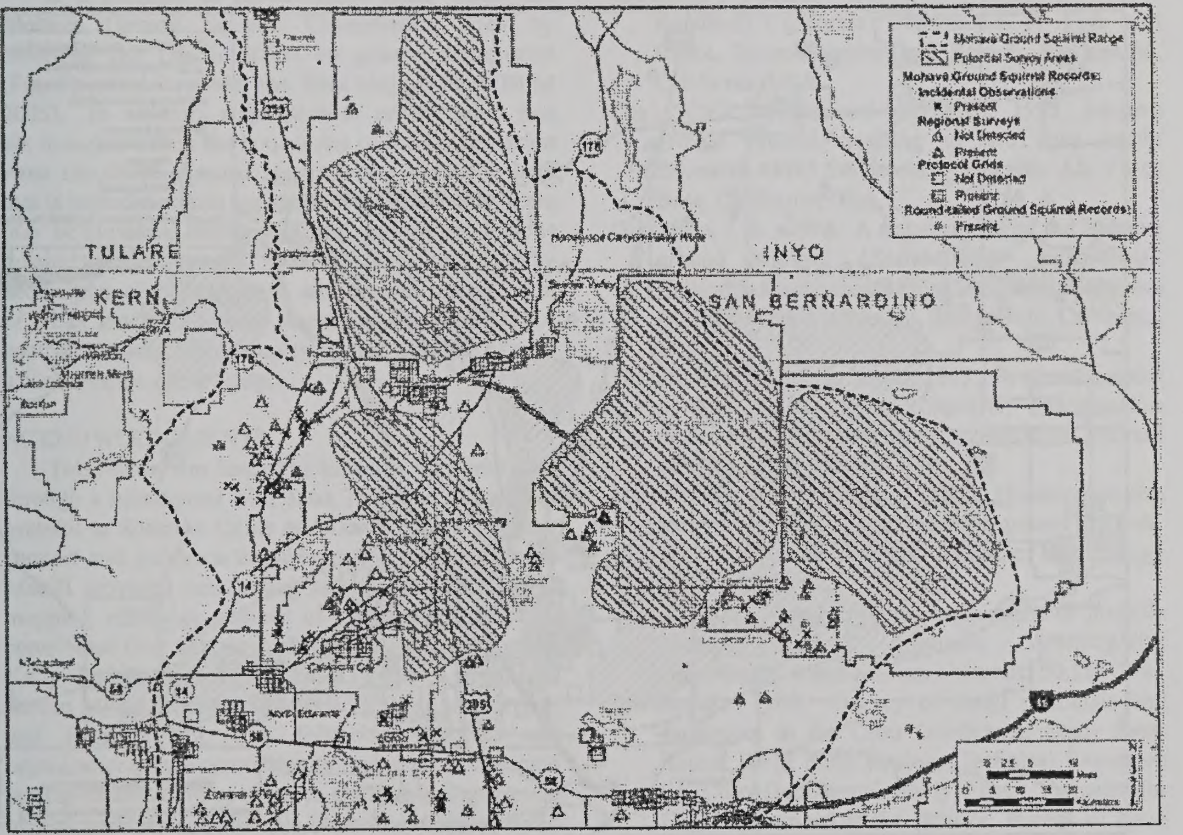

Figure 7. Potential survey areas in the northern and central portions of the Mohave ground squirrel range, showing their geographic relationship to survey efforts during the period 1998-2007.

been little or no sampling during the period 1998-2007 in these 4 extensive areas. A careful study plan should be developed to ensure adequate survey coverage within each area.

It is also recommended that field surveys be conducted in key areas within the southern range of the species in order to determine whether viable populations still remain outside of EAFB (Fig. 8). The trapping surveys could focus on public lands, but a serious attempt should be made to obtain permission for surveys on private lands as well. Because of the pace of development within the southern portion of the Mohave ground squirrel range, this exploratory work needs to be carried out with urgency.

The region southwest of the town of Mojave was identified in the West Mojave Plan (BLM 2003) as the Kern County Study Area. The West Mojave Plan recommended that Mohave ground squirrel trapping surveys be conducted here on public lands. The possibility was left open that the boundary of the Mohave Ground Squirrel Conservation Area could be modified to include these public lands if justified by survey results. A number of protocol trapping surveys have recently been carried out on private land in this area in connection with proposed wind energy projects. Although no Mohave ground squirrels have been trapped thus far, there have been 2 reported visual detections. It is recommended that additional trapping surveys be authorized on both public and private property, especially in areas that have not yet been investigated.

More information is needed about the relationship between the Mohave ground squirrel and its sibling species, the round-tailed ground squirrel. There are recent reports of round-tailed ground squirrel occurrences well inside the historic Mohave ground squirrel range to the west of Barstow and in the Western Expansion Area of Fort Irwin. Round-tailed ground squirrels seem well-adapted to land disturbance in agricultural areas and on the outskirts of towns. It is possible that hybridization is occurring where the 2 species come in contact. It is

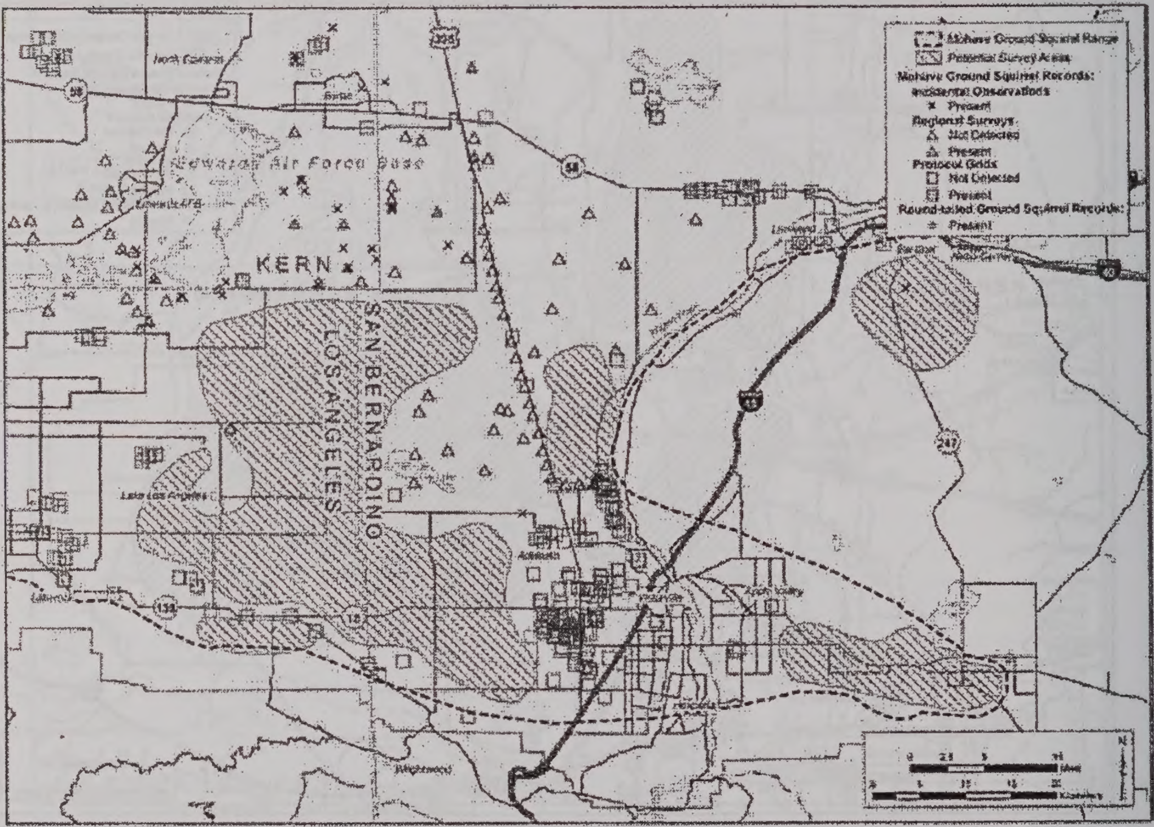

Figure 8. Potential survey areas in the southern portion of the Mohave ground squirrel range, showing their geographic relationship to survey efforts during the period 1998-2007.

recommended that surveys be carried out to determine the current eastern limits of the Mohave ground squirrel range and establish a baseline so that future westward movement of round-tailed ground squirrels could be detected. It is also recommended that genetic studies be undertaken in the contact zone to investigate the extent of hybridization where the 2 species co-occur.

Although trapping is the most effective method of identifying areas that support Mohave ground squirrel populations, it is recommended that certain modifications of current trapping procedures be tested. Trained wildlife dogs could be used to screen large areas and help focus trapping efforts on the most promising sites. Most trapping efforts to date have used large 100-trap grids. It would be of interest to try other trap configurations, such as more numerous small grids (for example, arrays of 20 traps) and long (>1000 meter) linear transects. Finally, such alternative trap configurations could be used in combination with adaptive cluster sampling (Thompson et al. 1998), which would allow for increased effort adjacent to a sampling unit where a Mohave ground squirrel is detected.

It is essential to protect BLM lands within the Mohave Ground Squirrel Conservation Area by enforcing the 1% limitation on ground disturbance (Fig. 1) called for under the West Mojave Plan (BLM 2005). In addition, acquisition of private lands that are included within the boundaries of the Conservation Area should be pursued aggressively, especially land that is included within known core areas. Finally, there may be important Mohave ground squirrel populations outside the Conservation Area that could protected by acquisition of private lands and careful management of BLM lands. The area stretching from the DTNA southeast toward Boron may be a good example of such a conservation opportunity.

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This review was funded by Edwards Air Force Base through a subcontract with Tetra Tech, Inc. I am very grateful to Shannon Collis and Donald Clark for their support and guidance throughout this project. Carrie Munill provided outstanding assistance with the GIS mapping effort. A number of biologists generously contributed their data, including Mark Allaback, Patrick Kelly, Tom Kucera, David Laabs, Denise LaBerteaux, Steven Myers, Michael O'Farrell, William Vanherweg, and Ryan Young. The following agencies and organizations gave permission to include data collected in studies that they sponsored: California Department of Fish and Game, California Department of Parks and Recreation, California Department of Transportation, Desert Tortoise Preserve Committee, Edwards Air Force Base, Fort Irwin, and US Bureau of Land Management. I greatly appreciate the helpful comments on the manuscript by B. Cypher, J. Harris, and 1 anonymous reviewer.

LITERATURE CITED

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APPENDIX 1

UNPUBLISHED REPORTS OF REGIONAL TRAPPING STUDIES CONDUCTED DURING THE PERIOD 1998-2007

Air Force Flight Test Center. 2004. Inventory for Presence of Mohave Ground Squirrel at Edwards Air Force Base, California. 26 pp. + appendices.

Air Force Flight Test Center. 2005. Inventory for Presence of Mohave Ground Squirrel at Edwards Air Force Base, California. Draft Report. 16 pp. + appendices.

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Leitner, Philip. 2001. California Energy Commission and Desert Tortoise Preserve Committee Mohave ground squirrel study. Final report 1998-2000. Prepared for Desert Tortoise Preserve Committee, Inc., Riverside, CA. 33 pp. + appendix.

Leitner, Philip. 2003. Inventory for presence of Mohave ground squirrels at Edwards AFB, California. Prepared for TYBRIN Corporation, Fort Walton Beach, FL. 13 pp. + appendices.

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Leitner, Philip. 2005. Trapping survey for the Mohave ground squirrel in the DTNA Eastern Expansion Area, 2003. Prepared for Desert Tortoise Preserve Committee, Inc., Riverside, CA. 19 pp.

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Starr, Michael J. 2001. Population Distribution and Abundance of Antelope Ground Squirrels (*Ammospermophilus leucurus*) and Mohave Ground Squirrels (*Spermophilus mohavensis*), in the Western Mojave Desert, Spring 2001. 9 pp. + appendix.

Starr, Michael J. 2006. Population Distribution and Abundance of Antelope Ground Squirrels (*Ammospermophilus leucurus*) and Mohave Ground Squirrels (*Spermophilus mohavensis*), in the Western Mojave Desert, Spring 2006. 10 pp. + appendix.

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5. ENVIRONMENTAL CONSIDERATIONS

a. General description of site characteristics and potential environmental issues (existing information)

Special or sensitive species and habitats

The Project site is located outside of Desert Tortoise Wildlife Management Areas (DWMA's), however recent surveys indicate that the potential exists for desert tortoise to occur on the Project site. In addition, a Mojave Ground Squirrel finding has been recorded approximately four miles from this site. Desert tortoise and the Mojave Ground Squirrel are both federal- and state-listed threatened species. Federally-listed species fall under the jurisdiction of the U.S. Fish and Wildlife Service (Service). We will consult with BLM wildlife specialists to determine the nature of any survey and ultimate mitigation requirements.

A variety of state species of special concern have the potential to occur on the Project site, including the burrowing owl, LeConte's Thrasher, several species of bats and prairie falcon. However, these species have not been encountered in recent pedestrian surveys of the site.

Our approach to evaluating the potential for special-status botanical species to occur within or in the vicinity of the proposed project is to conduct an initial habitat assessment with the objective of characterizing the habitats within and adjacent to the Project site and assessing the suitability of these habitats to support special-status plant species. Based on the habitat assessment, protocol-level surveys would be conducted during the blooming period only for targeted special-status botanical species with potential to occur in the suitable habitats identified within or adjacent to the Project site. Targeted botanical surveys in suitable habitats would be conducted as appropriate, until construction of the Project is completed.

Special land use designations

In 1976 Congress passed the Federal Land Policy and Management Act (FLPMA) which directed the BLM to inventory and develop a comprehensive land use management plan for the 25-million acre California Desert Conservation Area (CDCA). Land management in the CDCA is governed by the CDCA Plan (BLM 1980) as amended, which provides the management framework for the BLM's multiple-use mandate. Operating under a multiple-use mandate and as defined by FLPMA, BLM is responsible for managing public land and their various resource values to achieve the following objectives:

- utilize resources in the combination that will best meet the needs of present and future generations,

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State of California

Attachment M - CDFG Report on
Burrowing Owl Mitigation

Memorandum

:"Div. Chiefs - IFD, BDD, NED, & WMD
Reg. Mgrs. - Regions 1, 2, 3, 4, & 5

Date : October 17, 1995

From : Department of Fish and Game

Subject :

Staff Report on Burrowing Owl Mitigation

I am hereby transmitting the Staff Report on Burrowing Owl Mitigation for your use in reviewing projects (California Environmental Quality Act [CEQA] and others) which may affect burrowing owl habitat. The Staff Report has been developed during the last several months by the Environmental Services Division (ESD) in cooperation with the Wildlife Management Division (WMD) and regions 1, 2, and 4. It has been sent out for public review and redrafted as appropriate.

Either the mitigation measures in the staff report may be used or project specific measures may be developed. Alterative project specific measures proposed by the Department divisions/regions or by project sponsors will also be considered. However, such mitigation measures must be submitted to ESD for review. The review process will focus on the consistency of the proposed measure with Department, Fish and Game Commission, and legislative policy and with laws regarding raptor species. ESD will coordinate project specific mitigation measure review with WMD.

If you have any questions regarding the report, please contact Mr. Ron Rempel, Supervising Biologist, Environmental Services Division, telephone (916) 654-9980.

COPY Original signed by C.F Raysbrook

C. F. Raysbrook
Interim Director

Attachment

cc: Mr. Ron Rempel
Department of Fish and Game
Sacramento

STAFF REPORT ON BURROWING OWL MITIGATION

Introduction

The Legislature and the Fish and Game Commission have developed the policies, standards and regulatory mandates to protect native species of fish and wildlife. In order to determine how the Department of Fish and Game (Department) could judge the adequacy of mitigation measures designed to offset impacts to burrowing owls *(Speotyto cunicularia;* A.O.U. 1991) staff (WMD, ESD, and Regions) has prepared this report. To ensure compliance with legislative and commission policy, mitigation requirements which are consistent with this report should be incorporated into: (1) Department comments to Lead Agencies and project sponsors pursuant to the California Environmental Quality Act (CEQA); and (2) other authorizations the Department gives to project proponents for projects impacting burrowing owls.

This report is designed to provide the Department (including regional offices and divisions), CEQA Lead Agencies and project proponents the context in which the Environmental Services Division (ESD) will review proposed project specific mitigation measures. This report also includes preapproved mitigation measures which have been judged to be consistent with policies, standards and legal mandates of the Legislature,. the Fish and Game Commission and the Department's public trust responsibilities. Implementation of mitigation measures consistent with this report are intended to help achieve the conservation of burrowing owls and should compliment multi-species habitat conservation planning efforts currently underway. The *Burrowing Owl Survey Protocol and Mitigation Guidelines* developed by The California Burrowing Owl Consortium (CBOC 1993) were taken into consideration in the preparation of this staff report as were comments from other interested parties.

A range-wide conservation strategy for this species is needed. Any range-wide conservation strategy should establish criteria for avoiding the need to list the species pursuant to either the California or federal Endangered Species Acts through preservation of existing habitat, population expansion into former habitat, recruitment of young into the population, and other specific efforts.

California's burrowing owl population is clearly declining and, if declines continue, the species may qualify for listing. Because of the intense pressure for urban development within suitable burrowing owl nesting and foraging habitat (open, flat and gently rolling grasslands and grass/shrub lands) in California, conflicts between owls and development projects often occur. Owl survival can be adversely affected by disturbance and foraging habitat loss even when impacts to individual birds and nests/burrows are avoided. Adequate information about the presence of owls is often unavailable prior to project approval. Following project approval there is no legal mechanism through which to seek mitigation other than avoidance of occupied burrows or nests. The absence of standardized survey methods often impedes consistent impact assessment.

Burrowing Owl Habitat Description

Burrowing owl habitat can be found in annual and perennial grasslands, deserts, and arid scrublands characterized by low-growing vegetation (Zarn 1974). Suitable owl habitat may also include trees and shrubs if the canopy covers less than 30 percent of the ground surface. Burrows are the essential component of burrowing owl habitat. Both natural and artificial burrows provide protection, shelter, and nests for burrowing owls (Henny and Blus 1981). Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use man-made structures such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.

Occupied Burrowing Owl Habitat

Burrowing owls may use a site for breeding, wintering, foraging, and/or migration stopovers. Occupancy of suitable burrowing owl habitat can be verified at a site by detecting a burrowing owl, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance. Burrowing owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). A site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow there within the last three years (Rich 1984).

CEQA Project Review

The measures included in this report are intended to provide a decision-making process that should be implemented whenever-there is potential for-an action or project to adversely affect burrowing owls. For projects subject to the California Environmental Quality Act (CEQA), the process begins by conducting surveys to determine if burrowing owls are foraging or nesting on or adjacent to the project site. If surveys confirm that the site is occupied habitat, mitigation measures to minimize impacts to burrowing owls, their burrows and foraging habitat should be incorporated into the CEQA document as enforceable conditions. The measures in this document are intended to conserve the species by protecting and maintaining viable' populations of the species throughout their range in California. This may often result in protecting and managing habitat for the species at sites away from rapidly urbanizing/developing areas. Projects and situations vary and mitigation measures should be adapted to fit specific circumstances.

Projects not subject to CEQA review may have to be handled separately since the legal authority the Department has with respect to burrowing owls in this type of situation is often limited. The burrowing owl is protected from "take" (Section 3503.5 of the Fish and Game Code) but unoccupied habitat is likely to be lost for activities not subject to CEQA.

Legal Status

The burrowing owl is a migratory species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 C.F.R. Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3505, 3503.5, and 3800 of the California Department of Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs. To avoid violation of the take provisions of these laws generally requires that project-related disturbance at active nesting territories be reduced or eliminated during the nesting cycle (February 1 to August 31). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered “take”’ and is potentially punishable by fines and/or imprisonment.

The burrowing owl is a Species of Special Concern to California because of declines of suitable habitat and both localized and statewide population declines. Guidelines for the Implementation of the California Environmental Quality Act (CEQA) provide that a species be considered as endangered or “rare” regardless of appearance on a formal list for the purposes of the CEQA (Guidelines, Section 15380, subsections b and d). The CEQA requires a mandatory findings of significance if impacts to threatened or endangered species are likely to occur (Sections 21001 (c), 2103; Guidelines 15380, 15064, 15065). To be legally adequate, mitigation measures must be capable of “avoiding the impact altogether by not taking a certain action or parts of an action”; “minimizing impacts by limiting the degree or magnitude of the action and its implementation”; “rectifying the impact by repairing, rehabilitating or restoring the impacted environment”; “or reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action” (Guidelines, Section 15370). Avoidance or mitigation to reduce impacts to less than significant levels must be included in a project or the CEQA lead agency must make and justify findings of overriding considerations.

Impact Assessment

Habitat Assessment

The project site and a 150 meter (approximately 500 ft.) buffer (where possible and appropriate based on habitat) should be surveyed to assess the presence of burrowing owls and their habitat (Thomsen 1971, Martin 1973). If occupied habitat is detected on or adjacent to the site, measures to avoid, minimize, or mitigate the project’s impacts to the species should be incorporated into the project, including burrow preconstruction surveys to ensure avoidance of direct take. It is also recommended that preconstruction surveys be conducted if the species was not detected but is likely to occur on the project site.

Burrowing Owl and Burrow Surveys

Burrowing owl and burrow surveys should be conducted during both the wintering and nesting seasons, unless the species is detected on the first survey. If possible, the winter survey should be conducted between December 1 and January 31 (when wintering owls are most likely to be present) and the nesting season survey should be conducted between April 15 and July 15 (the peak of the breeding season). Surveys conducted from two hours before sunset to one hour after, or from one hour before to two hours after sunrise, are also preferable.

Surveys should be conducted by walking suitable habitat on the entire project site and (where possible) in areas within 150 meters (approx. 500 ft.) of the project impact zone. The 150-meter buffer zone is surveyed to identify burrows and owls outside of the project area which may be impacted by factors -such as noise and vibration (heavy equipment, etc.) during project construction. Pedestrian survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be no more than 30 meters (approx. 100 ft.) and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. To effectively survey large projects (100 acres or larger), two or more surveyors should be used to walk adjacent transects. To avoid impacts to owls from surveyors, owls and/or occupied burrows should be avoided by a minimum of 50 meters (approx. 160 ft.) wherever practical. Disturbance to occupied burrows should be avoided during all seasons.

Definition of Impacts

The following should be considered impacts to the species:

- Disturbance within 50 meters (approx. 160 ft.) Which may result in harassment of owls at occupied burrows;
- Destruction of natural and artificial burrows (culverts, concrete slabs and debris piles that provide shelter to burrowing owls); and
- Destruction and/or degradation of foraging habitat adjacent (within 100 m) of an occupied burrow(s).

Written Report

A report for the project should be prepared for the Department and copies should be submitted to the Regional contact and to the Wildlife Management Division Bird and Mammal Conservation Program. The report should include the following information:

- Date and time of visit(s) including name of the qualified biologist conducting surveys, weather and visibility conditions, and survey methodology;
- Description of the site including location, size, topography, vegetation communities, and animals observed during visit(s);
- Assessment of habitat suitability for burrowing owls;
- Map and photographs of the site;
- Results of transect surveys including a map showing the location of all burrow(s) (natural or artificial) and owl(s), including the numbers at each burrow if present and tracks, feathers, pellets, or other items (prey remains, animal scat);
- Behavior of owls during the surveys;
- Summary of both winter and nesting season surveys including any productivity information and a map showing territorial boundaries and home ranges; and
- Any historical information (Natural Diversity Database, Department regional files? Breeding Bird Survey data, American Birds records, Audubon Society, local bird club, other biologists, etc.) regarding the presence of burrowing owls on the site.

Mitigation

The objective of these measures is to avoid and minimize impacts to burrowing owls at a project site and preserve habitat that will support viable owls populations. If burrowing owls are detected using the project area, mitigation measures to minimize and offset the potential impacts should be included as enforceable measures during the CEQA process.

Mitigation actions should be carried out from September 1 to January 31 which is prior to the nesting season (Thomsen 1971, Zam 1974). Since the timing of nesting activity may vary with latitude and climatic conditions, this time frame should be adjusted accordingly. Preconstruction surveys of suitable habitat at the project site(s) and buffer zone(s) should be conducted within the 30 days prior to construction to ensure no additional, burrowing owls have established territories since the initial surveys. If ground disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site should be resurveyed.

Although the mitigation measures may be included as enforceable project conditions in the CEQA process, it may also be desirable to formalize them in a Memorandum of Understanding (MOU) between the Department and the project sponsor. An MOU is needed when lands (fee title or conservation easement) are being transferred to the Department.

Specific Mitigation Measures

1. Occupied burrows should not be disturbed during the nesting season (February 1 through August 3 1) unless a qualified biologist approved by the Department verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

2. To offset the loss of foraging and burrow habitat on the project site, a minimum of 6.5 acres of foraging habitat (calculated on a 100 m {approx. 300 ft.} foraging radius around the burrow) per pair or unpaired resident bird, should be acquired and permanently protected. The protected lands should be adjacent to occupied burrowing owl habitat and at a location acceptable to the Department. *Protection of additional habitat acreage per pair or unpaired resident bird may be applicable in some instances.* The CBOC has also developed mitigation guidelines (CBOC 1993) that can be incorporated by CEQA lead agencies and which are consistent with this staff report.

3. When destruction of occupied burrows is unavoidable, existing unsuitable burrows should be enhanced (enlarged or cleared of debris) or new burrows created (by installing artificial burrows) at a ratio of 2:1 on the protected lands site. One example of an artificial burrow design is provided in Attachment A.

4. If owls must be moved away from the disturbance area, passive relocation techniques (as described below) should be used rather than trapping. At least one or more weeks will be necessary to accomplish this and allow the owls to acclimate to alternate burrows.

5. The project sponsor should provide funding for long-term management and monitoring of the protected lands. The monitoring plan should include success criteria, remedial measures, and an annual report to the Department.

Impact Avoidance

If avoidance is the preferred method of dealing with potential project impacts, then no disturbance should occur within 50 meters (approx. 160 ft.) of occupied burrows during the nonbreeding season of September 1 through January 31 or within 75 meters (approx. 250 ft.) during the breeding season of February 1 through August 31. Avoidance also requires that a minimum of 6.5 acres of foraging habitat be *permanently* preserved contiguous with occupied burrow sites for each pair of breeding burrowing owls (with or without dependent young) or single unpaired resident bird. The configuration of the protected habitat should be approved by the Department.

Passive Relocation - With One-Way Doors

Owls should be excluded from burrows in the immediate impact zone and within a 50 meter (approx. 160 ft.) buffer zone by installing one-way doors in burrow entrances. One-way doors (e.g., modified dryer vents) should be left in place 48 hours to insure owls have left the burrow before excavation. Two natural or artificial burrows should be provided for each burrow in the project area that will be rendered biologically unsuitable. The project area should be *monitored daily for one* week to confirm owl use of burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe should be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

Passive Relocation - Without One-Way Doors

Two natural or artificial burrows should be provided for each burrow in the project area that will be rendered biologically unsuitable. The project area should be *monitored daily until the owls have relocated to the new burrows.* The formerly occupied burrows may then. be excavated. Whenever possible, burrows should be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe should be inserted into burrows during excavation to maintain an escape route for any animals inside the burrow.

Projects Not Subject to CEQA

The Department is often contacted regarding the presence of burrowing owls on construction sites, parking lots and other areas for which there is no CEQA action or for which the CEQA process has been completed. In these situations, the Department should seek to reach agreement with the project sponsor to implement the specific mitigation measures described above. If they are unwilling to do so, passive relocation without the aid of one-way doors is their only option based upon Fish and Game Code 3503.5.

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Eyas 10(1):38 Spring 1987

Reproductive Success of Burrowing Owls Using Artificial Nest Burrows in Southeastern Idaho

by Bruce Olenick

Artificial nest burrows were implanted in southeastern Idaho for burrowing owls in the spring of 1986. These artificial burrows consisted of a 12" x 12" x 8" wood nesting chamber with removable top and a 6 foot corrugated and perforated plastic drainage pipe 6 inches in diameter (Fig. 1). Earlier investigators claimed that artificial burrows must provide a natural dirt floor to allow burrowing owls to modify the nesting tunnel and chamber. Contrary to this, the artificial burrow introduced here does not allow owls to modify the entrance or tunnel. The inability to change the physical dimensions of the burrow tunnel does not seem to reflect the owls' breeding success or deter them from using this burrow design.

In 1936, 22 artificial burrows were inhabited. Thirteen nesting attempts yielded an average clutch size of 8.3 eggs per breeding pair. Eight nests successfully hatched at least 1 nestling. In these nests, *67 of 75* eggs hatched (59.3%) and an estimated 61 nestlings (91.0%) fledged. An analysis of the egg laying and incubation periods showed that incubation commenced well after egg laying bega. Average clutch size at the start of incubation was 5.6 eggs. Most eggs tended to hatch synchronously in all successful nests.

Although the initial cost of constructing this burrow design may be slightly higher than a burrow consisting entirely of wood, the plastic pipe burrow offers the following advantages: (1) it lasts several field seasons without rotting or collapsing; (2) it may prevent or retard predation; (3) construction time is minimal; (4) it is easy to transport, especially over long distances; and (5) the flexible tunnel simplifies installation. The use of this artificial nest burrow design was highly successful and may prove to be a great resource technique for future management of this species.

For additional information on constructing this artificial nest burrow, contact Bruce Olenick, Department of Biology, Idaho State University, Pocatello, ID 83209.

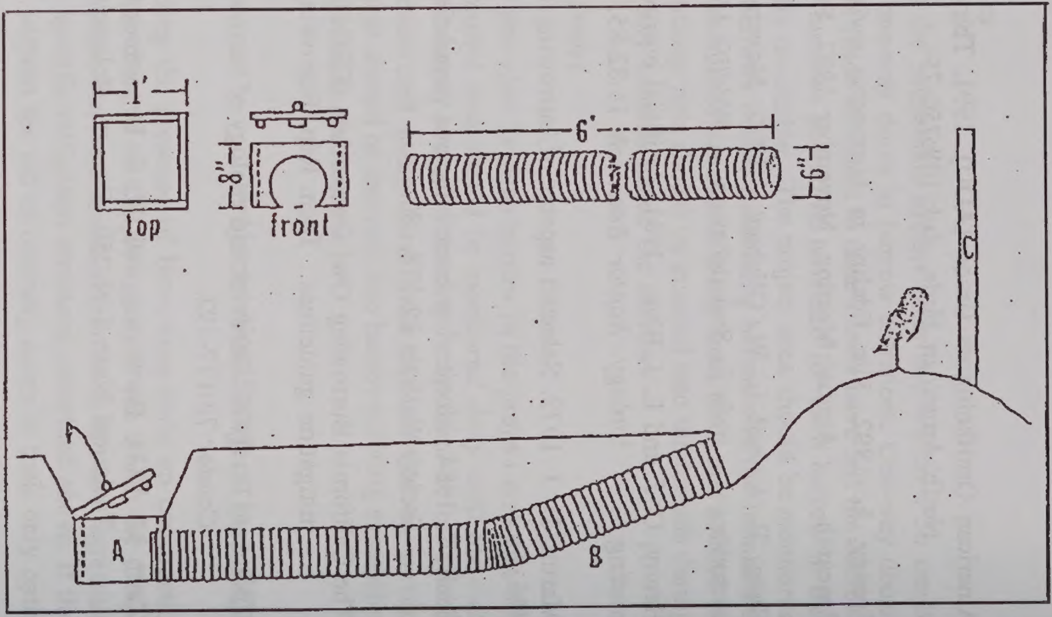

fig. 1 Artificial nest burrow design for burrowing owls Entire unit (including nest chamber) is buried 12" – 18" below ground for maintaining thermal stability of the nest chamber. A= nest chamber, B = plastic pipe. C = perch.

ATTACHMENT A

Attachment N - Press Enterprise Article

Microsoft

Microsoft Dynamics CRM

See how Microsoft Dynamics CRM can fit your government agency and create efficiencies.

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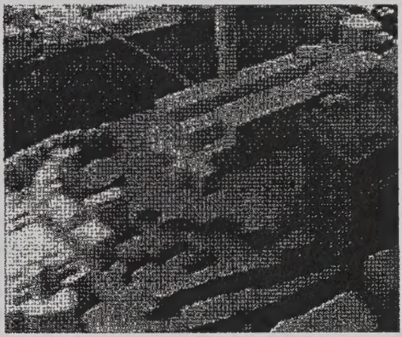
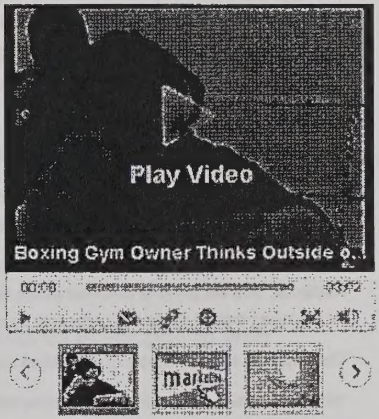
SOLAR ENERGY PROPOSAL CRITICIZED LUCERNE VALLEY: CHEVRON'S PLANS COULD DISTURB THREATENED SPECIES, SOME SAY. OTHERS SAY OLD FARMLAND IS A BETTER CHOICE.

By DAVID DANELSKI THE PRESS-ENTERPRISE

Publication: The Press Enterprise (Riverside, CA.)

Date: Friday, July 31 2009





Outside a Lucerne Valley elementary school auditorium, local resident Chuck Bell pointed to the vast desert to the north and explained that much of it is played-out farmland that would be ideal for solar energy development.

Water is no longer available for farming there because water tables have dropped or farmers have sold water rights, said Bell, a former San Bernardino County official who is now secretary of a Lucerne Valley economic development group.

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"It's all disturbed (from farming)," Bell said Wednesday evening. "It's got infrastructure. It's near roads and power lines. ... And it can't be used for anything else."

Inside the auditorium, an official with Chevron Energy Solutions, a subsidiary of the Chevron USA oil company, described plans to blanket 516 acres of undisturbed public land with photovoltaic panels that would generate enough solar electricity for 20,000 homes. The property is north of the San Bernardino Mountains, about eight miles east of the school.

Greg Thomsen, a U.S. Bureau of Land Management program manager, explained to an audience of about 60 people - mostly desert residents - that the bureau is committed to sustainable energy development on public land, subject to proper environmental review.

Last month, U.S. Interior Secretary Ken Salazar announced that the government would streamline the application process for alternative-energy projects on federal lands in the West to meet new demands for clean power.

The Chevron official, Ralph Hollenbacher, a senior technical service manager based in San Francisco, said it's more expedient for Chevron to develop solar energy on public land because the company can do "one-stop shopping" with the BLM to get access to large amounts of land and get environmental reviews completed.

Buying private land would require dealing with multiple landowners and still require environmental reviews, Hollenbacher said after the meeting. The cost of acquiring private land isn't a factor, he said.

Chevron's Lucerne Valley proposal is one of 159 wind and solar projects proposed on California public land managed by the BLM, a division of the U.S. Department of Interior under Salazar's leadership.

Some people at the meeting said they were concerned about the cumulative effect of a rush to develop energy on undisturbed land that is home to threatened desert tortoises and other wildlife.

Several also agreed with Bell, secretary of Lucerne Valley Economic Development Associates, saying the energy developments should be built on former farms and other private land that has less value as wildlife habitat.

"It's a land rush for renewable energy," said Gary Hatfield of Mountain Home Village, a small community east of Redlands. "Are we going to trade our public resources, places used by animals, for questionable energy technologies that 20 years from now may be obsolete?"

There isn't an endless supply of untouched habitat, one speaker said.

"Mother Nature is not making more pristine lands," said April Sall, a preserve manager for The Wildlands Conservancy, an Oak Glen-based group that protects open spaces through privately funded purchases. "We have to be careful with what we have."

No one in the audience voiced clear support of the project.

The evening meeting at Lucerne Valley Elementary School sought public comments for the Chevron project for preparation of an environmental study expected to be released later this year.

Reach David Danelski at 951-368-9471 or ddanelski@PE.com

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MONUMENT PLAN CREATES RIFT MOJAVE DESERT: THE SCHWARZENEGGER ADMINISTRATION FEAR...

Atttachment O - Detriot News

The Detroit News www.detnews.com

March 22, 2010 http://detnews.com/article/20100322/LIFESTYLE14/3220320

California environmentalists, growers agree on farmland reuse for solar

JASON DEAREN AND TRACIE CONE
Associated Press

LEMOORE, Calif. -- Cash-strapped farmers in California's agricultural heartland and environmentalists at odds over water rights and wildlife protections finally agree on something: that thousands of acres of cracked, salty farmland is the perfect site for a sprawling utility-scale solar farm.

The 47 square-miles of land proposed for the Westlands Solar Park in remote Kings and Fresno counties is just one of dozens of unfinished solar projects in California, but renewable energy analysts say it is a rare one that enjoys the broad support of environmental groups such as the Sierra Club, powerful agriculture interests and state government.

Thousands of solar panels would be located on and near the salty-white, fallowed farm land, most of which is owned by the Westlands Water District, the largest such district in the country comprised of 600,000 acres of San Joaquin Valley farmland.

Once completed, the first chunk of solar proposed for the site -- the total size of which is roughly that of San Francisco -- could generate up to 1 gigawatt of power, or enough to energize up to one million homes.

"I think a better fit (for the land) is farming, but we have what we have and you go from there," Westlands spokesman Sarah Woolf said.

The embrace of solar power as a new cash crop comes at a time when the district is struggling with mounting debt.

A decade ago, Westlands floated a bond to buy 100,000 acres of farm land where poor drainage had created a salt buildup called selenium, making the land unusable for growers. But with the salty land came water rights, so Westlands bought it so it could divert the water allocations to more productive farms.

Since then, drought and environmental issues have cut revenue to Westlands by reducing the amount of water it can sell to members, who range from corporate giant Harris Farms to family farming operations. Over the past two years, Westlands has tripled farmers' assessments to repay bonds when they can least afford it.

Westlands now sees solar power as a way to put the land back to work.

"(Solar is) a natural fit, it works," Woolf said. "But the underlying motivation is we need to figure out a way to repay the debt."

Now, with Mojave Desert solar projects shrinking in number because of recent proposed legislation by U.S. Sen. Dianne Feinstein, D-Calif., that would create two new national monuments there, Woolf said the valley has become "the prime location for solar."

The district has said it is also open to other types of energy development, including nuclear.

Environmentalists like the site for solar panels because it had been intensively farmed for decades, so it does not contain habitat for endangered species, an issue that has stalled projects in the sunnier Mojave.

"In this part of the world it's not often you find common ground between the water district, landowners and environmentalists, and this is a project that seems to have this potential," Barry Nelson, senior policy analyst at the Natural Resources Defense Council, said.

Another plus is the project's proximity to transmission lines and substations that could deliver energy produced at the site to homes throughout the state, said Daniel Kim, principal partner at Westside Holdings, the private investment group that has a lease contract with Westlands and neighboring farmers.

Also, as utilities seek renewable energy to meet the state's goal of getting one-third of its power from renewable sources by 2020, the California Energy Commission has identified a number of zones where large-scale projects can be developed. The land that would be used by Westlands Solar Park is included in these identified areas, which means some regulatory hurdles already have been met.

Despite the positive reaction to the project from disparate groups, the solar park has a number of hurdles to overcome, including getting through the regulatory hurdles associated with getting built new power lines and substations that will be needed to deliver the power.

Kim's group is working on negotiations with utility companies, who would need to build the transmission infrastructure upgrades before the site's potential can be realized.

Still, renewable energy experts say the project is promising, partly because landowner Westlands is a public agency operating under state authority, so many of the regulatory issues bogging down other large-scale solar projects do not apply.

The path to the finish line is more clearly defined here than perhaps any other project in the state right now, said Carl Zichella, Sierra Club's director of western renewable programs.

"This particular idea of using retired agricultural land for large scale renewable energy development ... has a lot of interest," he said.

Despite the area's sun potential, large-scale solar projects had largely failed to gain traction in the San Joaquin Valley because of Westlands' disinterest and a focus by developers on the more sunny Mojave.

"The whole idea of farmers letting go of these farms is not easy," Kim said. "When you're a third generation farmer, it's not a decision taken lightly."

But with the more sunny desert sites mired in a political, regulatory and environmental morass, the Valley's solar value has increased.

"Lo and behold, three years later (desert sites) are far less desirable because the desert has tremendous ecological diversity and a lot of stake holders who don't want to see desert with a lot of solar panels," Kim said.

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Attachment P _ Letter from Charles F. Wood, Chemehuevi Tribe

Chemehuevi Indian Tribe

P. O. Box 1976 · Havasu Lake, CA 92363 · (760) 858-4219 · Fax: (760) 858-5400

November 12th, 2009

Doug Feremenga
San Bernardino County Land Use Services Department / Planning Division
385 North Arrowhead Avenue, First Floor
San Bernardino, CA 92415

RECEIVED
NOV 1 6 2009
LAND USE SERVICES DEPT.
ADVANCE PLANNING DIVISION

Ref: Conditional Use Permit on Parcel Number 0491-091-07

Boulevard

Mr. Feremenga:

From the map provided I can not tell exactly where the subject property is located. I can say that it is in the general area of a Chemehuevi campsite discovered by the City of Barstow nearly 14 years ago. Recently, the San Bernardino County Museum – Archaeological Information Center indicated prehistoric lithic scatter, pottery, and a habitation site located at the Mojave Narrows; I know that this is some distance from this project but it shows are ancestral history in the area. That area is today still remembered by some as the "Chemehuevi Swamp". As referenced below we have concerns about the area specifically and of the whole area in general.

The Chemehuevi have a long and well documented history in the desert areas of southern California, southern Nevada, and northern and western Arizona. In fact, we would have originally considered all of San Bernardino County and parts of Riverside, Kern and Inyo Counties as our ancestral, historical homeland. We also considered parts of southern Nevada and western Arizona as within our homeland territories. In the late 1800's the vast majority of this area was declared public domain by the US Federal Government and the various Tribes that had traditionally used this land on an intimate, daily basis lost the ability to freely use it as their ancestors once had. The Chemehuevi were just one of several nations of people whose ancestors freely used the area in question.

At one time we would have called the area between the Tehachapi Mountains to the Colorado River and from Death Valley to nearly Yuma, AZ as our ancestral territory. In addition, we would claim from Ash Meadows and the Pahrump area through Las Vegas and into the Muddy and Virgin Rivers area and on into the Valley of Fire.

The particular area that you speak of is of the utmost importance to the Chemehuevi. I only bring the following facts to your attention to show the obvious ancestral, historical presence of the Chemehuevi Indians in the greater area between Hesperia/Victorville and Barstow.

This particular site is within a major transportation route between the Chemehuevi and our cousins the Kawiaasu, in the Tehachapi Mountains.

All along the length of the Mojave River are found areas of cultural resources; there may be burial sites, camp sites, 'sleeping circles' and village sites. This was a major residential and trade route in ancient times of my people between the coast and the Colorado River areas.

There are petroglyphs scattered across a wide swath of the Mohave and Colorado Deserts. In a publication titled, "Native American Rock Art at Ft. Irwin" distributed in both the Ft. Irwin Archaeology Center and the Mojave River Valley Museum in Barstow, the author states, "*Most likely, the Chemehuevi or Kawaiisu lived at Ft. Irwin*".

Also in, "Native American Rock Art at Ft. Irwin" the author states, "*The Fort Irwin petroglyphs dated by archaeologists so – far, however, are not the oldest examples of rock art in the Mojave Desert. Petroglyphs have been found in the Barstow area that are 12,000 years old, while examples at China Lake date to 19,000 years ago*".

There are also known geoglyphs in the area; many that may not be recognizable from ground level. For that reason I would request that an aerial survey be done of the area.

In a census conducted in the late 1800's of the Victor area (later to become Victorville) there were found 44 Indians. Of that group, 37 were Chemehuevi and 7 were Desert Kawaiisu. In fact, we have a picture taken of two Chemehuevi women and a child in their campground living near the Mojave Narrows in 1898. One of the women has been identified as Maria Chapula, a renowned Chemehuevi basket maker, who was born in Victor in 1856 and who lived there until her death in 1960 at the age of 104 years. This was most likely the ancient village site of Atongiabit.

In the mid 1800's three cowboys were killed by Chemehuevis on what is today 'The Las Flores Ranch' in Hesperia. This was the ancient village site of Guapiabit. This incident later led to the 'Chimney Rock Massacre' in the Lucerne Valley involving up to 200 Chemehuevi.

Several burials were un-earthed at the old 'Lane's Crossing' near what is today Oro Grande. I believe this was the ancient village site of Topiabit.

There is the recognized Chemehuevi Cemetery near Zzyzx.

There are known to be at least nine (9) large permanent village sites along the Mojave River between the Narrows and the city of Barstow. Some of their names are as follows: Muscumbiabit, Guapiabit, Atongiabit, Najayabit, Guapian, Apiambit, Apiagma, Topiabit and Guaspect.

The question is not if there are artifacts or human remains, but where and when will they be found. I respectfully request notification if artifacts or human remains are found so we might consider repatriation.

While we no longer have intimate daily contact with the specific area in question we do have grave concerns, but we would not oppose the project in general.

However, I strongly request that you contact the San Manuel (Serrano), Vanyume and Kawiaasu peoples for their concerns as well, if you have not already done so. In addition, the Mojave River Valley Museum (in Barstow) has a great amount of history regarding the 'Old Spanish Trail' which followed the Mojave River.

Thank you,

Charles F. Wood, Chairman
Chemehuevi Indian Tribe

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LUCERNE VALLEY ECONOMIC DEVELOPMENT ASSOCIATION (LVEDA)

To: Greg Thomsen – BLM (lucernesolar@blm.gov)

Re: **Comments – DEIS - Chevron Energy Solutions – Lucerne Valley Solar**

From: Chuck Bell, Pres. (chuckb@sisp.net)
P. O. Box 193
Lucerne Valley, CA 92356 760 964 3118

Date: 5/27/10

(Please also incorporate by reference our previous scoping comments)

GENERAL

LVEDA provides an "open forum" dealing with major projects and issues affecting/benefiting Lucerne Valley – therefore is not taking a direct "pro or con" position on this project. However we are in general opposition to utility-scale solar projects – especially on public land – preferring the use of pre-disturbed/fallowed private land – but as a first priority – solar panels on rooftops/parking lots/etc. throughout s. Calif. (which the DEIS failed to analyze as a viable alternative to the further commitment of public land resources to subsidize urban areas). Comment 148

We question the intent of a large corporation or its affiliates going through all the time, expense, permitting, paperwork, mitigation, etc. for a (relatively minor) 45 MW project. If it's a "feel good – we're doing something 'green' endeavor" – we prefer that the applicant partner with SCE and spread out its "good will" on rooftops and parking lots – a bigger public relations benefit. Comment 149

For whatever reason – to the best of our knowledge - Chevron Energy Solutions reps. have not participated in community meetings – unlike the reps. of every other local solar/wind project currently in the permitting process. Its absence has been noticed. Comment 150

Before the final decision is made, this project should be assessed via BLM's Programmatic process which will identify the limited areas available and suitable for solar plants – along with an understanding of all the land-uses that Lucerne Valley already provide s. Calif. - to fully understand current conflicts and why we need an "Energy Element" in our current BLM and County Plans. Comment 151

The DEIS is well written and understandable, however it devotes a lot of pages to extraneous litigation-avoidance stuff – leaving some real, critical issues unresolved.

Comment 152

SPECIFIC COMMENTS/POSITIONS

(Due to time constraints – apologize, but DEIS pages are generally not cited):

Alt 4 – Modified Site Layout – a viable option - would allow a buffer and on-site location and maintenance of transplanted yuccas/joshua trees – more reliable than "availability off-site to the public" – which would likely result in 50% mortality at best.

Comment 153

The "private land" alternative was basically ignored with inadequate rationale. First Solar and Next-Era found large, fallowed parcels in Lucerne Valley – with a lot more existing all the way to Palmdale.

Comment 154

Rated generating capacity vs. actual production is a major issue with desert solar projects. The net benefit is likely marginal. Energy/CO2 emissions/etc. required for making panels, structures, construction, etc. – plus the consumption of 516 acres of public land (@11 ½ acres/MW) – plus the additional loss of "multiple use" on the mitigation/compensation land ----compared to other energy sources – need to be assessed from a more global perspective.

Comment 155

De-brushing/grading will create a long-term dust source, adversely affecting the facility and down-wind receptors. Minimal grading, vegetation mowing and placement of decomposed granite or small gravel will help to stabilize the site and reduce weed infestations – as well as enhancing native re-vegetation if and when facilities are removed. The proposed "mowing" is certainly worth pursuing. However, the perennially-shaded ground will become devoid of vegetation and root structure – and the partially shaded area will likely generate more weeds than natives – thus a hindrance to operations and the need for regular weed abatement. (Note: Mojave rattlesnakes will love the shade on the project's periphery). The "Weed Control Plan" seems to have realistic and effective measures. (The Mojave Desert Resource Conservation District and its affiliated Mohave Weed Management Area group can offer advice if requested).

Comment 156

Construction water might be obtainable from the Mojave Water Agency's "Morongo Pipeline" – generally following Foothill Rd. immediately north of the project site – the use of untreated state water vs. good quality groundwater. Contact: MWA (760 946 7000) for info.and location of connections.

Comment 157

The long-term effectiveness of tortoise relocations to adjacent areas didn't seem adequately addressed.

Comment 158

3.11-3: The statement: “Hunting is not an allowable use on the Proposed Action site” is very likely incorrect. It certainly won’t be when construction starts – but currently – the only regulation we know of is “shotgun only”. Comment 159

To fully assess the consequence of the project’s effect on biological resources – the DEIS needs a description of the most likely location for the 1:1 ratio mitigation/compensation – the location and ultimate loss of “multiple uses” on said parcel that might be purchased – or to what resource any “in-lieu” fee might be directed. Off-site mitigation/compensation requirements ARE a direct result of this project and need to be fully explained. Comment 160

Assuming the applicant fully intends to develop both phases, approval of Phase 1 alone is premature w/o knowing the transmission requirements of both phases together (upgrading existing line or a new one). Needs discussion! Comment 161

New transmission lines or upgrades should include “raven proof” devices to the extent feasible – ravens being the biggest threat to juvenile tortoises. Comment 162

The “heat sink” and albedo “change” effects need to be assessed, especially for the larger projects and those close to residential uses. Comment 163

Project decommissioning and recycling of facilities were described – however specific measures for reclamation were sketchy. Bonding or some other means to assure ultimate clean-up and reclamation in case of project abandonment need to be included in the permit. Comment 164

The “level of service” (LOS) assessments for regional highways/roads don’t adequately quantify the actual “on the road” impacts – especially on Hwy 18 through Lucerne Valley’s commercial area and 4 way stop. CHP escorting will likely be necessary. The proposed “off-peak” construction travel may not fully suffice in and by itself. Comment 165

Unless we missed it – there was no mention of a right-turn lane onto Santa Fe Fire Rd. Quote from our scoping letter: “A right-turn lane on Hwy 247 would provide safer egress in this area of high-speed traffic – especially for the construction phase”. Comment 166

The analysis re: the project’s future effect on BLM’s CDCA Plan’s “Contingent Corridor S” is probably correct – but this “corridor” needs to be removed from the Plan in order to preclude another “Green Path North” attempt. Comment 167

4.6-5: Question: The project description seems to indicate that the panels would be “fixed” in place – thus w/o tracking ability. If so – is this statement correct?: “During precipitation events, solar panels would be placed in the flat horizontal position”. Comment 168

Comment 169

Table 1-1: The statement: "The site chosen is within a 'development corridor' ….." is NOT consistent with the LV Community Plan's locations for "industrial" development and thus misleading. The entire table includes very weak rationale.

Comment 170

The Big Bear hospital is cited as close and available in case of injury, emergency, etc. It might be, but the responding County Fire paramedics – and likely the back-up ambulance service from Victor Valley – normally transport patients to Apple Valley or Victorville hospitals – not Big Bear.

Comment 171

Figure 3.18-1: The Cumulative Projects Map shows a "Cumulative Effects Study Area" (CESA) boundary within a 6 mile "buffer" radius from the project site. However it shows other proposed project locations outside said "buffer". A complete and adequate cumulative impact analysis needs to show and assess all the proposed projects within the larger Lucerne Valley area that is affected. Some of the renewable projects listed may no longer be considered. The ones not shown – all with applications currently being processed by the County and/or BLM – are 2 "First Solar" PV's west on Hwy 18 and another adjacent to Barstow Rd. – Granite Wind west of Barstow Rd. (with DEIR/EIS issued) – Next-Era's PV in n. Lucerne Valley – plus the proposed 29 Palms Marine Base expansion into a major portion of Lucerne/Johnson Valleys northeast of the Chevron site. All these projects will have significant cumulative effects on our community.

Following are responses to various "Social and Economic" statements and issues:

Comment 172

3.15-6: The statement re: LVEDA is correct and appreciated.

Comment 173

4.15-3: The statement: With the project, "the social well-being of LVEDA (and its reps.) would be enhanced because compatible sustainable infrastructure development would be implemented within the Lucerne Valley" is a bit esoteric and certainly not fully consistent with our mission. Some of the residents close to the project site remain opposed and thus seem to be "adversely affected" by the project.

Comment 174

Need more emphasis on "local hiring". Talent and equipment are locally available for a substantial portion of the construction and maintenance work required. It certainly won't look good to import a lot of outside workers – union or not – when a local workforce is available. Would be just another imposition on our community. Cement/concrete/aggregate are locally available and we certainly expect that they be utilized if the project is built.

Comment 175

The project's effect on surrounding private land values is summarily dismissed. At the very least, it could hinder area sales. Empirical data is insufficient to determine "no substantial effect".

These projects aren't necessarily "beneficial" to local communities. We need ways to make them more "friendly and welcomed". Chevron could be the lead in devising a method to "arrange" the purchase of materials in San Bernardino County – with sales tax benefiting the county – and ideally – the ½ cent Measure I (road tax) portion dedicated to Lucerne Valley roads that get hammered by all the truck traffic associated with these projects. Comment 176

We invite the applicant to a LVEDA meeting to better explain the project's tax revenue benefit – specifically the annual taxes from its "leasehold interest". Property taxes are not generated from public lands. How do these projects' tax incentives affect property tax revenue normally based on the assessed values of the facilities? Would the annual "leasehold interest" revenue be deducted from what the county receives from BLM as "payment in lieu of taxes" (PILT)? Comment 177

WE REQUEST A MEETING WITH THE APPLICANT AND BLM PRIOR TO FINALIZATION OF THE EIS AND A DECISION ON THE PERMIT. Comment 178

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Chevron

Energy Solutions

Raphael Varieras
Project Development Manager

Chevron Energy Solutions
345 California Street, 18th Flr.
San Francisco, CA 94104
Tel (415) 733-4735
Fax (415) 733-4950
raphael.varieras@chevron.com

May 18, 201

Mr. Greg Thomsen
Bureau of Land Management
California Desert District Office
22835 calle San Juan de los Lagos
Moreno Valley, CA 92553

Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project

Mr. Thomsen,

Upon review of the above referenced document (distributed January 2010), as applicant we offer the following comments for your consideration and inclusion:

1. Our revised site phasing plan (Figure 2.1) and site layout plans (Figures 2.2a & 2.2b) will be sent out to you on a CD for overnight delivery. The phasing has been revised during detailed engineering to defer construction of the eastern portion of the site until Phase 2. This defers the design and construction costs in the area susceptible to the greatest surface water flows, as well as the potential impacts and mitigation associated with grading and development of this area. Additionally, should the transmission line capacity not be upgraded by SCE, this portion of the site would not be developed, avoiding the potential impacts all together. The revised site layout plans have been revised to reflect both fixed tilt and single axis tracker systems. Comment 179

2. During detailed engineering, we have concluded that cutting vegetation at 4-inches above the ground would not be practical for construction. In all likelihood, the vegetation would be removed and 420 acres of the site would be rough graded. The DEIS states that the vegetation on the site would be cut to 4-inches above the ground. Since this area would then be shaded by solar panels after construction is complete, this would essential result in the loss of all vegetation on the developed portion of the site (as acknowledged in Section 4.6.2.2 of the EIS). Consequently, the change to rough grading this area would not result in new or different impacts as compared to what has been evaluated in the EIS. Comment 180

3. We disagree with the conclusion in the water resources section that states: "Therefore, it is not possible at this time to estimate what the potential flood risk is at the site and the possible effects." The project would maintain existing flow patterns and velocity for surface water run-off from the site, and the potential for flooding would not change as a result of the project. The effects related to flooding would most likely be limited to damage to Project equipment placed in areas where high-velocity flooding would occur. A finalized hydrology study will also be included on the CD. Comment 181

Please accept this as a formal request to revise the above referenced document to reflect these changes. Thank you in advance for your review and consideration. Please contact us with any questions or comments.

Comment 182

Respectfully,

Raphael Varieras

Chevron

Energy Solutions

Raphael Varieras
Project Development Manager

Chevron Energy Solutions
345 California Street, 18th Flr.
San Francisco, CA 94104
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raphael.varieras@chevron.com

May 20th, 2010

Mr. Greg Thomsen
Bureau of Land Management
California Desert District Office
22835 calle San Juan de los Lagos
Moreno Valley, CA 92553

Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project

Mr. Thomsen,

This letter is to clarify the comments made to the above documents in our previous letter dated May 18, 2010. Where it reads "the site would be rough graded", as applicant, we would like to explain the intent embodied in the terms "rough graded": through the grubbing and scarifying process, it is expected that the contours of the site will be modified while the general slope and undulations of the site will be preserved.

Comment 183

Thank you in advance for your review and consideration. Please contact us with any questions or comments.

Respectfully,

Raphael Varieras

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From: Jessop.Carter@epamail.epa.gov
To: lucernesolar@blm.gov
Subject: Review of the Chevron Energy Solutions Lucerne Valley Solar Project DEIS
Date: 05/20/2010 06:44 PM
Attachments: EPA_LucerneValleySolarDEISLtr.pdf

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project. Our review and comments are provided pursuant to the National Environmental Policy Act, the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

Our comment letter is attached below and a hard copy will be mailed to the address indicated in the DEIS cover letter.

Carter W. Jessop
U.S. EPA, Region 9
Environmental Review Office (CED-2)
75 Hawthorne Street
San Francisco, CA 94105
(415) 972-3815
jessop.carter@epa.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAY 2 0 2010

Mr. Greg Thomsen
Bureau of Land Management
California Desert District Office
22835 Calle San Juan de los Largos
Moreno Valley, CA 92553

Subject: Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project, San Bernardino County, California [CEQ# 20100033]

Dear Mr. Thomsen,

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) and California Desert Conservation Area Plan Amendment (CDCAPA) for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project (Project). Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) Regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act (CAA).

EPA supports increasing the development of renewable energy resources in an expeditious and well planned manner. Using renewable energy resources such as solar power can help the nation meet its energy requirements while minimizing the generation of greenhouse gas emissions. While renewable energy facilities offer many environmental benefits, they are not without impacts. Appropriate siting and design of such facilities is of paramount importance if the nation is to make optimum use of its renewable energy resources without unnecessarily depleting or degrading its water resources, wildlife habitats, recreational opportunities, and scenic vistas.

The Bureau of Land Management (BLM) has identified thirty-four proposed renewable energy projects as "fast track" projects that are expected to complete the environmental review process and be ready to break ground by December 2010 in order to be eligible for funding under the American Recovery and Reinvestment Act. Twenty-eight of these are located in our Region, approximately half of which are in California. We are aware that many more projects that have not been designated "fast-track" are also being considered by BLM. Many, if not all, of these projects, fast track or otherwise, are proposed for previously undeveloped sites on public lands. In making its decisions regarding whether or not to grant rights-of-way for such projects, we recommend that BLM consider a full range of reasonable alternatives to minimize the adverse environmental impacts. Such alternatives could include alternative technologies or altered

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project footprints at the proposed location, as well as alternate sites, such as inactive mining or other disturbed sites that may offer advantages in terms of availability of infrastructure and less vulnerable habitats. Given the large number of renewable energy project applications currently under consideration, particularly in the Desert Southwest, we encourage BLM to apply its land management authorities in a manner that will promote a long-term sustainable balance between available energy supplies, energy demand, and protection of ecosystems and human health.

On August 4, 2009, EPA provided extensive formal scoping comments for the Lucerne Valley Solar Project, which included a variety of detailed recommendations regarding purpose and need, range of alternatives, and resource areas of concern. Based on our review of the Lucerne Valley Solar DEIS, we have rated the document as *Environmental Concerns – Insufficient Information* (EC-2). Please see the enclosed "Summary of EPA Rating Definitions." An "EC" signifies that EPA's review of the DEIS has identified environmental impacts that should be avoided in order to provide adequate protection for the environment. A "2" rating signifies that the DEIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment.

In the enclosed detailed comments, we provide specific recommendations regarding analyses and documentation needed to assist in assessing potential significant impacts from the proposed Project. Specifically, EPA is concerned with the: 1) lack of sufficient hydrological analysis and impacts to water resources; 2) impacts to biological resources and special status species; 3) scope of cumulative impacts analysis and the potential impacts from reasonably foreseeable future actions; 4) current justification for the Project purpose, need, and independent utility; 5) range of alternatives; and 6) discussion of climate change.

EPA appreciates the opportunity to provide input on this Project and the multitude of DEISs under preparation for renewable energy projects in our Region. We are available to further discuss all recommendations provided. When the Final EIS is released for public review, please send two hard copies and two CDs to the address above (Mail Code: CED-2). If you have any questions, please contact me at 415-972-3521, or contact Carter Jessop, the lead reviewer for this Project. Carter can be reached at 415-972-3815 or jessop.carter@epa.gov.

Sincerely,

Kathleen M. Goforth

Kathleen M. Goforth, Manager
Environmental Review Office (CED-2)

Enclosures: Summary of EPA Rating Definitions
Detailed Comments

US EPA DETAILED COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT AND CALIFORNIA DESERT CONSERVATION AREA PLAN AMENDMENT FOR THE PROPOSED CHEVERON ENERGY SOLUTIONS LUCERNE VALLEY SOLAR PROJECT, SAN BERNARDINO COUNTY, CALIFORNIA, MAY 20, 2010

Project Description

Chevron Energy Solutions (CES) has submitted an application to the Bureau of Land Management (BLM) to construct a 45-megawatt (MW) solar photovoltaic (PV) plant and associated facilities on 516 acres of federal land approximately eight miles east of Lucerne Valley in San Bernardino County. The proposal includes an interconnection to an existing Southern California Edison (SCE) distribution line to the north of the site as well as an amendment to the California Desert Conservation Area (CDCA) Plan designating the site as suitable for renewable energy generation. While EPA is pleased with certain aspects of this Project, including the close proximity to existing infrastructure and maintenance of existing site topography, we recommend that the Final EIS (FEIS) provide additional analyses (including any necessary supporting documentation) and identify specific minimization or mitigation measures, as discussed below.

Hydrology and Water Resources

Ephemeral Washes

Natural washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream. Healthy ephemeral waters with characteristic plant communities control rates of sediment deposition and dissipate the energy associated with flood flows. Ephemeral washes also provide habitat for breeding, shelter, foraging, and movement of wildlife. Many plant populations are dependent on these aquatic ecosystems and adapted to their unique conditions. The potential damage that could result from disturbance of flat-bottomed washes includes alterations to the hydrological functions that natural channels provide in arid ecosystems, such as adequate capacity for flood control, energy dissipation, and sediment movement, as well as impacts to valuable habitat for desert species. EPA is concerned about the potential impacts to the ephemeral water segments located within the project area. The DEIS provides basic hydrologic information on the location of washes in the project area, but does not include a detailed map nor analysis of the origin and termini of these ephemeral waters.

Comment 184

Recommendations:

- Include a more detailed discussion and map of the water resources and hydrographic basins surrounding the proposed project.

Comment 185

- Include information on the functions and locations of ephemeral washes in the project area.

Comment 186

Flooding and Drainage

The DEIS states that the project site is prone to intense flooding events, including flash flooding (p. 3.5-5), however no floodplain studies nor mapping exercises have been conducted to assess flood hazards. In addition, the document states that "No hydrologic modeling has been done at this stage." (p. 2-16). Considering the lack of information regarding site hydrology and flood danger, it is impossible to properly assess the risks that the proposed project poses to local and regional hydrology, water quality, and human health. Comment 187

Recommendations:

- Demonstrate that downstream flows will not be disrupted due to proposed site development. Comment 188
- Include a functional assessment of the waters on the proposed project site and describe the changes to the function of those waters that would result from the proposed project. Comment 189

The DEIS does not provide information about fencing (pg. 2-16) nor the effects of fencing on drainage systems. As previously discussed, storms in this region can be sudden and severe, resulting in flash flooding. Fence design must address hydrologic criteria, as well as security performance criteria. The National Park Service recently published an article[1] on the effects of the international boundary pedestrian fence on drainage systems and infrastructure. We recommend that BLM review this article to ensure that such issues are adequately addressed with this project. Comment 190

Recommendation:

- Provide more detailed information about fencing and potential effects of fencing on drainage systems within the FEIS. Ensure that the fencing proposed for this project will meet appropriate hydrologic performance standards. Comment 191

The DEIS includes a Modified Site Layout Alternative (Alternative 4). This alternative would redirect drainage on the site to a vegetated screen designed to screen views of the project for nearby residents and drivers on Santa Fe Fire Road (p. 2-24). This alternative is chosen as the BLM "Preferred Alternative" (p. 2-36). By rerouting drainage, this alternative would alter site hydrology, potentially impacting water quality, groundwater recharge, soil erosion, vegetation, and wildlife. The potential for such consequences is not addressed, however. In addition, insufficient information is provided on specifically how and where drainage would be rerouted. Comment 192

Recommendation:

- Provide details on where and how drainage would be rerouted across the site under Alternative 4: Modified Site Layout. Comment 193
- Analyze the potential impacts of Alternative 4 in greater detail, in particular considering impacts to hydrology, water quality, groundwater, soil, vegetation and wildlife. Comment 194

Waters of the United States

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[1] National Park Service, August 2008, Effects of the International Boundary Pedestrian Fence in the Vicinity of Lukeville, Arizona, on Drainage Systems and Infrastructure, Organ Pipe Cactus National Monument, Arizona,

We are concerned with possible impacts on waters of the U.S. (WUS). We understand the project proponent is re-evaluating whether or not any of the washes flowing through the proposed site may qualify as WUS. We encourage BLM to consult with the Army Corps of Engineers regardless of the outcome of that analysis. A jurisdictional determination of waters of the United States must be completed in order to determine whether waters of the US will be impacted by the proposed project. In addition, we understand from our correspondence with BLM that the washes that flow through the site terminate before reaching any known waters of the US; however, this is not discussed in detail in the document and this information should be provided in the interest of public disclosure. Comment 195

Recommendation:

- Consult with the Army Corp or Engineers regarding a jurisdictional determination for the proposed project site, and include the results of that determination in the FEIS. Comment 196

Biological Resources and Special Status Species

Desert Wash Communities

According to the DEIS, construction of the proposed Project is expected to result in direct loss of 18 acres of land characterized as desert wash communities (p. 3.6-7). In addition, the proposed Project will degrade the functions of waters throughout the site through the placement of road crossings, fencing, and photovoltaic cell posts. As noted above (see Hydrology and Water Resources, Ephemeral Washes) natural washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher-order waters downstream, and ephemeral washes support unique plant populations and provide habitat for breeding, shelter, foraging, and movement of wildlife. Desert wash ecosystems are highly sensitive to disruption, and impacts to their natural state may be impossible to remediate Comment 197

Recommendations:

- Avoid and minimize direct and indirect impacts to desert washes to the maximum extent practicable. Impacts to be accounted for and minimized include erosion, migration of channels, and local scour. Comment 198
- Minimize the number of road crossings over washes in order to minimize erosion, migration of channels, and scour. Road crossings should be designed to provide adequate flow through during large storm events. Comment 199
- Commit to the use of natural washes, in their present location and natural form and including adequate natural buffers, for flood control to the maximum extent practicable. Comment 200
- Demonstrate that downstream flows will not be disrupted due to proposed changes to any natural washes. Comment 201

Special Status Species

The proposed project and any of the BLM action alternatives would result in direct impacts to vegetation and wildlife, including a number of special status species. EPA Comment 202 recommends that the FEIS and ROD contain specific and binding commitments to the mitigation measures put forth in the Biological Assessment (BA) and DEIS. Furthermore, additional details regarding the mitigation measures to be employed would assist in the assessment of impacts to biological resources. For instance, mitigation measure MM BIO-12 (p. 4.6-15) would offset impacts to desert tortoises by preserving off-site desert tortoise habitat. Further details regarding the location and nature of this off-site compensatory mitigation should be provided, as available. In addition, we recommend that the BLM consider applying compensatory mitigation at a ratio higher than the 1:1 ratio put forth in the DEIS. As stated in the DEIS, the impacts to desert tortoise would likely extend beyond the project boundaries due to sensitivity to noise, vibrations, invasive species introduction, and collision with vehicles traveling to and from the site. We therefore recommend that compensatory mitigation be expanded to account for these additional impacts. Lastly, in the interest of full public disclosure, EPA recommends that the FEIS include the most up to date information available regarding the status of consultation with U.S. Fish and Wildlife Service and California Department of Fish and Game. Comment 202 ctd

Recommendation:

- The FEIS and ROD should include specific and binding commitments to mitigation measures put forth in the BA and DEIS. Comment 203
- Consider the implementation of compensatory mitigation under MM BIO-12 that exceeds the 1:1 ratio discussed in the DEIS. Comment 204
- The FEIS should include the most up to date information available regarding the status of consultation with the US FWS and CDFG. Comment 205

The DEIS contains a brief discussion of biological soil crusts or cryptobiotic crusts (p. 3.4-2). The analysis dismisses these crusts as not serving a critical role in dust suppression on the proposed project site, however no further details are provided. EPA recommends that this discussion be expanded to include details regarding the extent of biological soil crusts on the site, the role they play on the site, and any impacts the proposed project may have on these crusts. Comment 206

Recommendation:

- Expand the discussion of biological soil crusts to include details regarding their extent on the proposed project site, the role they play on the proposed project site, and possible impact resulting from BLM action alternatives. Comment 207

Cumulative Impacts Analysis

The BLM has received more than 220 ROW applications for utility-scale solar energy projects in California, Nevada, Arizona, New Mexico, Utah, and Colorado. We understand that BLM and the Department of Energy are jointly preparing a Solar Programmatic Environmental Impact Statement (PEIS); however, the DEIS does not include a discussion of the PEIS. The 24 solar energy study areas identified in conjunction with the Solar PEIS encompass 670,000 acres, and that area could be used to generate nearly 100,000 MW of solar electricity.

The DEIS lists 3 solar projects in close proximity to the proposed project, but limits the scope of the cumulative impact analysis to only those projects occurring within 6 miles of the proposed project site. The reasoning for limiting the scope of the cumulative impact analysis to Comment 208 that radius is not provided. Without further information about projects in the region, it is difficult to conduct a thorough cumulative impacts analysis. The FEIS should include a more extensive analysis that defines the parameters of the analysis and the reasons for the establishment of those parameters. Comment 208 ctd.

Recommendations*:*

- Update the list of reasonably foreseeable projects to include all projects that may have impacts that may cumulatively affect the Lucerne Valley. In particular, the analysis should include discussions of the cumulative impacts on transmission capacity, water resources, and biological resources. Comment 209
- Evaluate site conditions at locations with existing ROW applications. Determine and disclose whether the ROW applications are active and viable. Comment 210

As an indirect result of providing additional power, it can be anticipated that this project will allow for development and population growth to occur in those areas that receive the generated electricity.

Recommendation:

- The DEIS should describe the reasonably foreseeable future land use and associated impacts that will result from the additional power supply. The document should provide an estimate of the amount of growth, likely location, and the biological and environmental resources at risk. Comment 211

Project Purpose, Need and Independent Utility

Project Purpose and Need

EPA believes the discussion in the DEIS regarding the purpose and need for the CES Project should be expanded. As we indicated in our scoping comments, the *purpose* of the proposed action is typically the specific objectives of the activity, while the *need* for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity. Comment 212

Building upon the comment above, the Purpose and Need for a project should be stated broadly enough to spur identification of the full range of reasonable range of alternatives, regardless of what the future findings of an alternatives analysis may be. The Purpose and Need should focus on the underlying problems to address (e.g., lack of capacity to serve an increasing demand for energy, or the need to develop sufficient renewable energy to meet State renewable portfolio standards). A solar power plant may be an integral component of the potential solution to the problems identified in a Purpose and Need discussion; however, the Purpose and Need statement should allow for the analysis of a full scope of alternatives, including off-site locations, environmentally preferable on-site alternatives or other modes of renewable energy generation. Comment 213

The DEIS eliminates all off-site and alternative technology alternatives from consideration. In addition, the analysis of potential on-site alternatives was limited to the Comment 214

Comment 214 ctd.

proposed action, a single reduced project alternative and a single modified site layout alternative. This somewhat narrow range of alternatives is, in part, influenced by the Bureau of Land Management's (BLM) narrowly defined Purpose. According to the DEIS, BLM's purpose for the CES proposed action is "to approve, approve with modifications, or deny issuance of a Right-of-Way (ROW) grant to CES for the proposed solar project." (at p. 1-2). While this may be the immediate federal purpose of the project, we recommend that the FEIS use a combined BLM and Project Proponent Purpose and Need statement as the foundation upon which later sections, such as the alternatives analysis, are based. It would also be helpful to include a discussion of the types of modifications that BLM could require, the circumstances under which BLM is authorized to deny a ROW grant, and the consequences of such a denial. The purpose statement should be broad enough to allow for a reasonable range of alternatives, including environmentally preferable alternatives.

Recommendation:

- The FEIS should reflect a broader purpose and need statement that allows for a full evaluation of other alternatives, including off-site locations and other environmentally preferable on-site alternatives. Comment 215
- The FEIS should explain BLM's options for acting upon an application for a right-of-way grant. For instance, it would be helpful if BLM would explain the extent of its authority in regards to requiring the adoption of a "modified" project alternative. Comment 216

Comment 217

While the DEIS indicates that the need for the proposed action has its basis in Federal orders and laws regarding renewable energy generation, the current Purpose and Need section does not fully describe the specific Federal, State, and individual utility power provider renewable energy targets, timelines, and underlying needs to which BLM is responding. EPA believes this context is imperative for decision makers and the public to have, in light of the large number of renewable energy projects moving forward.

Comment 218

Presumably, some number of renewable energy facilities will be constructed pursuant to the joint Department of Energy (DOE)/BLM Programmatic Solar DEIS effort as well as the Desert Renewable Energy Conservation Plan (DRECP) process. It would be helpful to know the likely locations, construction timing, and generation capacities of such facilities relative to the proposed Project.

Recommendations:

- Fully describe the specific Federal and State renewable energy targets, timelines, and underlying needs to which BLM is responding, and explain how the Project meets those needs in the context of the many renewable energy project applications in the Desert Southwest and California. Comment 219
- To the extent practicable, the FEIS should discuss how many of the total renewable energy applications received by BLM are likely to proceed pursuant to the joint Department of Energy (DOE)/BLM Programmatic Solar DEIS effort and the Desert Renewable Energy Conservation Plan (DRECP) process, and the level of energy production those applications represent. Comment 220

- Further describe the utility purchases of power and provide a description of how the power would be bought, sold, and used so that the reader can better evaluate the tradeoffs between resource protection and power generation.

Comment 221

Project Independent Utility

The FEIS should clearly demonstrate the independent utility of the Project within its current geographic limits as it relates to the need for the Project. If the Project need cannot be met without future planned improvements, such as the reconductoring or further upgrading of the Southern California Edison transmission lines proposed to serve the site, the scope of the Project should be expanded accordingly, since these would be considered connected and similar actions (40 CFR 1508.25). In that case, the NEPA evaluation should include the full extent of the planned Project, including the necessary transmission lines and how it will operate. This broader scope should be applied to the identification and evaluation of project alternatives that may be less environmentally damaging. EPA believes this is the most effective way to address indirect and cumulative environmental impacts. The DEIS indicates that a separate environmental analysis would be conducted if further renovation of the SCE transmission lines were necessary; however, if the Project cannot meet its Purpose and Need without the transmission line project (thereby qualifying it as a connected action), the FEIS should address both projects together. Generally, funding or constraints of project staging and construction should not be used as a basis for segmenting the evaluation of environmental impacts under NEPA.

Comment 222

The DEIS indicates that "It has not been determined if upgrades to the existing 33-kV SCE distribution line, beyond the proposed reconductoring, would be required to accommodate Phase II" (p. 2-5). EPA recommends that the FEIS describe the current capacity of the existing transmission line and perform all necessary transmission analyses before the publication of the FEIS. The FEIS should also include a discussion of the existing transmission capacity compared to the future capacity after both reconductoring and any other potentially necessary upgrades. Considering the excess capacity that is stated to exist on the current transmission line (p. 2-15), the FEIS should consider an alternative that does not rely on the upgrade.

Comment 223

Recommendations:

- Demonstrate the independent utility of the Proposed Project within its current geographic limits as it relates to the need for the Project. If the Project need cannot be met without future planned improvements, the scope of the Project should be expanded accordingly by including an analysis of future improvements to the full extent of the planned Project, including the necessary transmission lines and how it will operate, since these would be considered connected and similar actions (40 CFR 1508.25).

Comment 224

- EPA recommends that the FEIS disclose: 1) the current available capacity of the existing Southern California Edison transmission line; 2) the estimated capacity of the transmission line following reconductoring and any other necessary renovation; and 3) to what degree the line is capable and expected to accommodate additional renewable energy generated in the Project's vicinity.

Comment 225

Alternatives Analysis

Reasonable Range of Alternatives

Comment 226

The DEIS presents an unduly limited alternatives analysis. EPA believes that the alternatives analysis needs to be expanded to include a full analysis of a reasonable range of alternatives.

Comment 227

CEQ Regulations for implementing NEPA (40 CFR, Parts 1500 - 1508) state that the alternatives section of an EIS should "*rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly describe the reasons for their having been eliminated*" (40 CFR, part 1502.14). All reasonable alternatives that fulfill the purpose of the project's purpose and need should be evaluated in detail, including alternatives outside the legal jurisdiction of the BLM (Council on Environmental Quality's (CEQ) Forty Questions[2], #2a and #2b). The more alternatives considered, the greater the possibility of avoiding significant impacts. "*Reasonable alternatives include those that are practical and feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.*" (CEQ Forty Questions, #2a)

Comment 228

The DEIS states that "identifying alternative land is beyond the scope of this EIS" (p. 2-32); however, as stated at 40 CFR 1502.14 (c), the NEPA analysis must include a full range of alternatives, including those that may not be within the jurisdiction of the lead agency. For reasons stated earlier, EPA believes BLM's current Purpose and Need statement is too narrow. Furthermore, when eliminating alternatives from consideration, the DEIS provides insufficient justification. Each alternative was described and a qualitative reason for elimination was provided. This qualitative discussion of the reasons for eliminating alternatives does not identify a clear set of criteria that were used to screen all alternatives in a similar manner. For example, no criteria outlining thresholds for competitively priced renewable energy, minimal plant efficiency rates, and levels of air, water, or habitat impacts were provided. If such criteria were used, the criteria and resulting quantification of impacts should be incorporated into the FEIS. The alternatives analysis should be constrained based upon specific and, as appropriate, quantifiable criteria, such that only those alternatives that do not meet these specific parameters are eliminated from further consideration.

Recommendations:

- Provide a clear discussion of the reasons for the elimination of alternatives that are not evaluated in detail and provide a clear set of criteria to screen all alternatives. The potential environmental impacts of each alternative should be quantified to the greatest extent practicable. For example, the FEIS should include a matrix that rates each of the alternatives on each of the selection criteria and include this information in the Executive Summary. Comment 229
- Clearly identify the economic criteria used for analyzing alternatives. As appropriate, fully consider alternatives rejected in the earlier analysis. The FEIS should also include a concise summary of any cost-benefit analyses preformed in the evaluation Comment 230

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[2] Forty Most Asked Questions Concerning CEQ's NEPA Regulations, 40 CFR Parts 1500-1508, Federal Register, Vol. 46, No. 55, March 23, 1981.

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

of the Proposed Project and the various alternatives. This information should also be included in the Executive Summary. Comment 230 ctd.

- Discuss how unquantified environmental impacts (such as a reduction in visual impacts) have been determined in the environmental analysis. Comment 231

Consideration of Disturbed Site Alternatives

As additional alternatives are considered for evaluation in the FEIS, as well for future projects, EPA continues to recommend the identification of locations that have been previously disturbed or contaminated. The FEIS should discuss any methods or tools BLM has used to identify and compare locations for siting renewable energy facilities, and to ascertain whether or not any disturbed sites are available that would be suitable for the proposed project. For example, the EPA's Re-Powering America initiative works to identify disturbed and contaminated lands appropriate for renewable energy development. For more information on the project visit http://www.epa.gov/oswercpa/ Comment 232

Recommendations:

- EPA strongly encourages BLM to promote the siting of renewable energy projects on disturbed, degraded, and contaminated sites before considering large tracts of undisturbed public lands. Comment 233
- The FEIS should include information regarding all criteria used to evaluate the CES site and alternatives. Comment 234

Consideration of Additional Modified Site Layout Alternatives

The Action Alternatives carried forward for further analysis by BLM include CES's Proposed Action Alternative, a Smaller Project Alternative and a Modified Site Layout Alternative. The Modified Site Layout Alternative is modified so as to reduce visual impacts; however, in order to do so, it increases impacts to hydrology and water resources (see below). EPA recommends that additional alternatives designed to avoid impacts to desert washes be considered in greater detail. Comment 235

Recommendations:

- Consider additional on-site "Modified Layout" alternatives, particularly those that avoid and/or minimize impacts to sensitive desert washes and their associated communities. Comment 236

Climate Change

We commend BLM for the attention given to the issue of climate change (Section 3.1). However, the DEIS does not include measures to avoid, minimize, or mitigate the effects of climate change on the proposed project, nor does it discuss the extent to which climate change may alter the impacts of the proposed project on the environment. Scientific evidence supports the concern that continued increases in greenhouse gas emissions resulting from human activities will contribute to climate change. Effects on weather patterns, sea level, ocean acidification, Comment 237 chemical reaction rates, and precipitation rates can be expected. These changes may affect the scope and intensity of impacts resulting from the proposed project.

Comment 237 ctd.

Recommendations:

- Consider how climate change could affect the proposed project and the affected environment, specifically within sensitive areas, and assess how the impacts of the proposed project could be exacerbated by climate change.

Comment 238

- Identify strategies to more effectively monitor for climate change impacts in the surrounding area, such as monitoring groundwater change or special status species.

Comment 239

- Quantify and disclose the anticipated climate change-related *benefits* of solar energy. We suggest quantifying the greenhouse gas emissions that would be produced by other types of electric generating facilities (solar, geothermal, natural gas, coal-burning, and nuclear) generating comparable amounts of electricity, and compiling and comparing these values.

Comment 240

Miscellaneous Edits

The DEIS contains numerous inconsistencies. For example, while the text states that no intermittent streams or rivers exist on or adjacent to the site, the figures (such as 3.5-1) label hydrologic features running through the site as "intermittent stream / river". Furthermore, the discussion of the outcome of the desert tortoise survey at 3.6-21 does not agree with the data presented on figure 3.6-3. A number of such inconsistencies exist in the document. Please correct these errors.

Comment 241

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

Category "1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category "2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category "3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

From: O'Shea, Helen
To: LucerneSolar@blm.gov
Subject: Chevron Lucerne Valley DEIS Comments - NRDC, Sierra Club, The Wilderness Society
Date: 05/13/2010 03:04 PM
Attachments: Chevron Lucerne Valley DEIS comments May 13th.pdf
Exhibit 1 - Desert Siting Criteria Memo June 29.pdf
Exhibit 2 Chevron Lucerne Map.jpg

Please accept and fully consider the following comments on the Draft EIS for the Chevron Lucerne Valley solar project on behalf of the Natural Resources Defense Council, the Sierra Club, and The Wilderness Society.

Many thanks.

Helen O'Shea
Deputy Director – Western Renewable Energy Project
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NATURAL RESOURCES DEFENSE COUNCIL
SIERRA CLUB
THE WILDERNESS SOCIETY

May 13, 2010

Mr. Greg Thomsen
Bureau of Land Management
California Desert District Office
22835 Calle San Juan de los Lagos
Moreno Valley, CA 92553

lucernesolar@blm.gov

Re: Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project (DOI-BLM-CAD008-2008-0030)

Dear Mr. Thomsen:

This letter constitutes the comments on the above-captioned proposed solar project and draft environmental impact statement (EIS) of the Natural Resources Defense Council (NRDC), The Wilderness Society (TWS), and the Sierra Club, national environmental membership organizations with long histories of advocacy on behalf of the lands and resources administered by the Bureau of Land Management (BLM). More recently these organizations have been intensively involved in the Bureau's work to develop a comprehensive solar program as well as its efforts to "fast track" the permitting of individual utility-scale solar projects in California so that they may be eligible for grant funding under the American Recovery and Reinvestment Act of 2009.

Introduction. Our organizations recognize the need to develop the nation's renewable energy resources and to do so rapidly in order to respond effectively to the challenge of climate change. Unique natural resources here in California are already being affected by climate change, including, for example, the pikas of Yosemite National Park and the Joshua trees in Joshua Tree National Park. We also recognize that renewables development can help create jobs in communities that are eager for them, because of the nation's economic crisis. For these and other related reasons, our organizations are working with regulators and project proponents to move renewables projects forward. That said, renewable development is not appropriate everywhere on the public lands and must be balanced against the equally urgent need to protect unique and sensitive resources of the California Desert Conservation Area (CDCA). California is lucky indeed that we have sufficient renewable resources, including solar resources, to do their development in an environmentally and fiscally sensitive way.[1]

As we and our colleagues at sister organizations have repeatedly stated, the best way to develop the solar resources of the CDCA is through comprehensive, pro-active planning by both the federal government and the state to identify the most appropriate areas for such development --

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[1] California's Renewable Energy Transition Initiative found, for example, that the state potentially could access 500 GW of renewable energy, an order of magnitude greater than the electric grid in this state could possibly handle.

i.e., solar development zones -- and to guide development to those zones. *See, e.g.,* letter dated June 29, 2009 to Interior Secretary Salazar and California's Governor Schwarzenegger and signed by 11 organizations, including our own, attached as Exhibit 1.

We support the BLM's adoption of zone designation for its forthcoming solar programmatic EIS because of the benefits inherent in this approach, including but not limited to clustering development of large-scale projects in appropriate places, rather than permitting them to be strewn across the landscape. We also applaud the agency's – and the Interior Department's – commitment to work closely with the State of California in the development of the Desert Renewable Energy Conservation Plan which, as you may already know, will designate not only renewable energy development zones, but also zones for conservation as well as include a comprehensive mitigation strategy. The integration and completion of both of these efforts offers the promise of a balanced plan that will facilitate development of renewable resources in the Desert while protecting desert resources.

Despite our fundamental belief in the critical importance of agency-guided development of renewables, rather than developer-initiated development, we have, as indicated, been investing a great deal of time and effort into the fast track projects. We have done so in response to the emphasis the Department, the BLM and the developers place on meeting ARRA deadlines as well as the potential role these projects could play in meeting the economic and renewable generation goals of the state and federal governments. We have also done so because we wanted to make the projects, and especially the utility-scale solar projects, as environmentally sensitive as they can be and because we wanted to ensure, to the extent possible, that their accompanying environmental documents are as sound as they can be. It is now apparent to us that not even the best of the environmental documents being produced for the fast track projects and/or the best projects should be models or precedents for the future.

The fast track project sites were chosen without the benefit of siting criteria developed either by desert activists, environmental organizations, scientists and others, *see* Renewable Siting Criteria for California Desert Conservation Area, attached to June 29, 2009 letter referred to above, or by the Bureau. The Bureau in fact has yet to develop any siting guidance that would help field staff, developers and others identify appropriate sites – i.e., those with relatively low resource values and fewer resource conflicts. Moreover, the projects themselves were designated by Interior and the BLM as fast track projects without consideration of environmental issues. And, equally importantly, the timetable established for review of these projects did not take into account their scale, the agency's lack of experience with the technologies involved, and the agency's lack of experience permitting these kinds of projects.

Regardless of the outcome of the environmental review process for this or any other fast track project, we urge the BLM and the Interior Department to acknowledge publicly the deficiencies of the current process and to commit publicly to improving it. More specifically, we urge both entities to affirm that neither the current process, nor any of the project sites, nor any of the environmental documents, establish any legal or procedural precedents for future decision-making, siting or environmental review. We make this urgent recommendation notwithstanding the fact that this particular project appears to be proposed for an appropriate site and the accompanying DEIS represents an improvement in several respects over other such documents.

The Chevron Energy Solutions (CES) Project. The proposed 45 MW CES project appears to "score" quite well against the Renewable Siting Criteria for the California Desert Conservation Area developed by numerous organizations, including ours. For example, at least some of the lands in the right of way (ROW) application for this project have been genuinely disturbed, see, e.g., Draft Environmental Impact Statement and California Desert Conservation Area Plan Amendment for the Proposed Chevron Energy Solutions Lucerne Valley Solar Project (hereinafter referred to as "DEIS"), at 2-2,[2] and there are some abandoned buildings on the site, id. at 3.9-2, along with graded roads, id., and evidence of extensive "low level" mineral exploration activity, id. at 4.9-2. The area has low scenic values, id. at 4.5-3 and is located in a "development corridor" within which significant impacting activities have long been contemplated, such as highways, pipelines and transmission lines. See, e.g., id. at ES-11. See also id. at 1-13 (locating renewable projects "in development corridors minimizes environmental effects and avoids desert fragmentation.")

Equally importantly, the lands subject to this ROW application are of comparatively low resource value: for example, it appears that significantly fewer desert tortoise, a federally listed species, were found on the site when protocol-level surveys were conducted, DEIS at 3.6-21 as compared to the large number of desert tortoise found in the study area of the Ridgecrest project proposed by Solar Millennium. See, Ridgecrest Solar Power Project CEC-BLM SA/DEIS 5.3-1. Moreover, while the DEIS identifies suitable habitat for the Mojave Ground Squirrel on the site, there have been "no historical records [of occurrences] within five miles," id. at Table 3.6-3.

Similarly, the number of sensitive plant species found on this site is smaller than the number found at the proposed Ivanpah site. The site includes no critical habitat for any listed species, unlike, for example, one of the wind fast track projects, AES Daggett Ridge, and implicates no Area of Critical Environmental Concern (ACEC) or other special management area designated by the BLM. Although there are desert washes on this site, id. at 3.6-7, they comprise only a tiny fraction of the site (3%), id. at 3.5-4, unlike other proposed solar thermal project sites, e.g. see Blythe Solar Power Project CEC-BLM SA/DEIS B.2-11. Please see map of resource values on the project site attached as Exhibit 2.

In addition, this site is near an urbanized area that has suffered significantly during the "Great Recession," DEIS at 3.15-7, and would welcome employment opportunities for some of its residents, see id. at 4.18-4. It is well-served by roads and is located near existing transmission, id. at 1-13, with sufficient capacity to transmit electricity that would be generated in Phase I of the project and, depending on which alternative is chosen, potentially Phase II as well. See id. at 2-5. Indeed, the DEIS indicates that re-conductoring of the existing transmission line may be sufficient to serve both phases. Id. at 2.5.

Clearly, the "prescreening process [that was] conducted between the applicant and [the Barstow Field Office of the] BLM prior to the CES's submittal of [its] application" was thorough and thoughtful, and led to the selection of a project site without "major [environmental] issues of concern." DEIS at 2-30.

That said, we do have some concerns about the project and its accompanying DEIS.

Comment 242

Our principal concern with this project at this time relates to the source of the water that will be used in its construction and operation. Because this is a photovoltaic project, it is projected to use significantly less water than other solar technologies and most, if not all, of the water used once construction is completed will be for panel washing. DEIS at 3.5-6. The DEIS is notably vague about the amount of water that will be necessary for this particular purpose, saying that it will be between 10,000 and 20,000 gallons for washing panels once a year in Phase 1 and between 12,000 and 25,000 gallons in Phase 2. Id. at 2-22 – 2-23. Those are very wide margins of uncertainty, and we could find no explanation for them in the draft. Is it because the company has no definite idea how often it will have to wash panels or is it because the amount of panel washing will depend on weather conditions? Or is there another possible reason not presented in the document? Comment 242 ctd.

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[2] In fact, the DEIS' references to the extent of disturbed lands in the ROW application are inconsistent. Although at one point the text suggests that much if not all the land has been disturbed, see, DEIS at 2-2, at other points the amount of disturbed land is clearly less than all, see, e.g., id. at 3.6-3 ("Some of the site was disturbed…."). At one point, the DEIS states that only five acres or 1% of the site have been disturbed. Id. at 3.6-7

Of even greater concern is that the source of this water is not identified. At one point, the DEIS says the needed water will be acquired from "local large industrial companies or municipal water companies," DEIS at 2-23, at another that it will come "from a permitted off-site source," id. at 4.5-3, and at still another that it might come from new or existing on-site wells or off-site sources, id. at 3.5-6, although subsequently we learn that there are no known on-site wells, see, id., Figure 3.5-1. Section 4.15 at page 372 states that the water will be from "off-site" sources but does not specify what or where those sources are. We also note that at 4.18.1.5 there is an apparent typo in the text regarding the water source which adds to the confusion around this issue: "The Proposed Action **would use** (emphasis added) surface water or groundwater and would instead use off-site and permitted municipal or industrial water sources for dust control and panel cleaning. Therefore, the Proposed Action would not cause an irreversible or irretrievable commitment of water resources in the project area." Comment 243

The Bureau should not permit a development like this one to go forward without assuring itself – and the public, the owners of these lands – that its proponents can fully satisfy this critical need. Rather than let Chevron lock up what appears to be an appropriate site for solar development, one that possesses "unique and extreme levels of solar radiation," id. at 2-24, without showing that it can actually follow through with the project, the BLM should require the company to prove that it has a contract or some other firm arrangement for the necessary water. Comment 244

The topic of flood risk raises a somewhat similar concern. Although the DEIS acknowledges that there is a risk of flooding at this site, see, e.g., DEIS at 2-30, it concedes that, due to lack of data, the risk cannot be estimated and, as a result, potential impacts of flooding cannot be assessed, see, e.g., id. at 4.5-2. We appreciate the frankness on this topic and hope that this "hole" will be filled in the final document. Comment 245

Our concerns with the DEIS relate to three key issues: the purpose and need statement, the alternatives considered, and the cumulative impact analysis, all of which, unfortunately, were problems with the Bureau's first solar DEIS, the Ivanpah DEIS. In all these respects, this document is much better than the Ivanpah draft, but it could – and should – be better yet. Comment 246

The purpose and need statement for this project is slightly broader than the one in the Ivanpah draft, but it remains too narrow. Ivanpah's purpose and need was explicitly limited to a stark dichotomy: "approve" or "deny" the company's application for a solar project and, as the result, the document addressed only the "no action" option and the "proposed project." A supplemental draft with a revised purpose and need and additional alternatives was recently issued in an attempt to remedy this egregious approach to "the heart" of the process established by the National Environmental Policy Act (NEPA). Comment 247

The draft states that the BLM's purpose and need is "to respond to" the company's ROW application, see, e.g., DEIS at 1-1, and, that in response, the agency has identified five alternatives, see, e.g., id. at ES-2.2-1. In reality though, the Bureau seems to still be "stuck" in the Ivanpah dichotomy. For example, at several points, the draft states "BLM's purpose and need is to process a ROW application." See, e.g., id. at 2-32, 2-36. The BLM should avoid both this mindset as well as too narrow a statement of purpose and need in order to help ensure that its EISs are legally Comment 248 defensible documents. In place of the statement that was used here, our organizations urge the adoption of the following to achieve these goals:

Comment 248 ctd.

> The purpose of the proposed action is to "facilitate environmentally responsible commercial development of solar energy projects"[3] consistent with the statutory authorities and policies applicable to the Bureau of Land Management, including those providing for contributions towards achieving the renewable energy and economic stimulus and renewable energy development objectives under the Energy Policy Act of 2005 (EPAct), the American Recovery and Re-Investment Act, and Presidential and Secretarial orders.
>
> The need for this action is to implement Federal policies, orders and laws that mandate or encourage the development of renewable energy sources, including the Energy Policy Act of 2005, which requires the Department of the Interior to seek to approve at least 10,000 MW of non-hydropower renewable energy on public lands by 2015, and the Federal policy goal of producing 10% of the nation's electricity from renewable resources by 2010 and 25% by 2025; to enable effective implementation of the economic incentives for qualifying projects intended by the American Recovery and Reinvestment Act; and to support the State of California's renewable energy and climate change objectives, consistent with BLM's mandates and responsibilities.

This kind of purpose and need statement would clearly satisfy applicable legal requirements, see, e.g., National Parks Conservation Assn v. BLM, 586 F.3rd 735 (9th Cir. 2009), and thus help ensure that environmentally appropriate projects such as this one appears to be will not only be permitted but will also be built without unnecessary delays.

Comment 24

As indicated above, the draft states that it addresses five alternatives. At the same time, its authors clearly understand that the "real" number is smaller. For example, the DEIS repeatedly points to the similarities between Alternatives 3 and 4. For example, those two options would produce the same amount of MW, have the same construction schedule, features and project components and would use the same amount of water DEIS at 4.4-3, 4.5-4. Alternative 4 is "just" five acres smaller than 3. Id. at 4.4-3 – although the alteration would clearly make a difference to views of the project from SR 247 addressing one of the major local concerns about this project. See, also, id. at 2-24 ("project components, project phasing, energy generated, access roads, transmission interconnect and construction methods would be the same as those previously described for CES's Proposed Action"). Similarly, Alternatives 1 and 2 aren't really different either. See, e.g., Table ES-1, Comparison Summary of Effects of Proposed Action and Alternatives (identical statements for each of the "alternatives" in every single category).

Comment 2

Alternative 5, however, *is* a different option and one that is significantly smaller than the proposed action -- 30 MW vs. 45 MW. See, e.g., DEIS at 2-25. We commend the Barstow Field Office for including such an option. A smaller alternative is key to establishing a real range as well as to providing readers a fuller understanding of the tradeoffs inherent in the other larger "action" alternatives. Thanks to the inclusion of this option here, it appears that a smaller project would not significantly reduce the impacts of the construction and operation of the proposed project while it would definitely reduce the megawatts of renewable energy generated.

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[3] This quotation is from Secretary Salazar himself.

As for the draft's treatment of cumulative impacts, we think it could be improved. Currently it seems quite lacking in quantitative information, including quantitative information about proposed utility scale solar projects in the area. There are three applications for large scale solar projects within a six mile radius of the Lucerne Valley project see 3-18.2. Because the Bureau is the permitting agency for those projects, it should have on hand information that could be used to develop estimates to address at least some key topics such as air quality and biological resources for example. The inclusion of such information will strengthen this document and contribute to more informed decision-making.

Comment 251

In addition to the three proposed solar projects within a six mile radius of the project site, there are permitted residential and commercial projects that will also contribute to cumulative impacts. While these projects were not permitted by the Bureau, all reasonable efforts must be made to obtain information regarding their potential impacts and construction timing so that a full picture of cumulative impacts can be presented in the final EIS.

Comment 252

In conclusion, this project appears to be well-sited with regard to impacts on important desert resources. As we have previously noted, renewable development is not appropriate everywhere on the public lands and must be balanced against the equally urgent need to protect unique and sensitive resources of the CDCA. California is lucky indeed that we have sufficient renewable resources, including solar resources, to do their development in an environmentally responsible manner.

Thank you in advance for considering our comments. If you have any questions about them, please do not hesitate to contact us.

Sincerely,

Johanna Wald
Senior Attorney, NRDC
111 Sutter Street, 20th Floor
San Francisco CA 94104

Helen O'Shea
Deputy Director, Western Renewable Energy Project, NRDC
111 Sutter Street, 20th Floor
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Senior Representative, Sierra Club
801 K Street, Suite 2700
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Alice Bond
California Public Lands Policy Analyst, The Wilderness Society
655 Montgomery Street, Suite 1000
San Francisco, CA 94111

cc: Jim Abbott, Acting California State Director, BLM

Audubon California
California Native Plant Society * California Wilderness Coalition
Center for Biological Diversity * Defenders of Wildlife
Desert Protective Council * Mojave Desert Land Trust
National Parks Conservation Association
Natural Resources Defense Council * Sierra Club * The Nature Conservancy
The Wilderness Society * The Wildlands Conservancy

Renewable Siting Criteria for California Desert Conservation Area

Environmental stakeholders have been asked by land management agencies, elected officials, other decision-makers, and renewable energy proponents to provide criteria for use in identifying potential renewable energy sites in the California Desert Conservation Area (CDCA). Large parts of the California desert ecosystem have survived despite pressures from mining, grazing, ORV, real estate development and military uses over the last century. Now, utility scale renewable energy development presents the challenge of new land consumptive activities on a potentially unprecedented scale. Without careful planning, the surviving desert ecosystems may be further fragmented, degraded and lost.

The criteria below primarily address the siting of solar energy projects and would need to be further refined to address factors that are specific to the siting of wind and geothermal facilities. While the criteria listed below are not ranked, they are intended to inform planning processes and were designed to provide ecosystem level protection to the CDCA (including public, private and military lands) by giving preference to disturbed lands, steering development away from lands with high environmental values, and avoiding the deserts' undeveloped cores. They were developed with input from field scientists, land managers, and conservation professionals and fall into two categories: 1) areas to prioritize for siting and 2) high conflict areas. The criteria are intended to guide solar development to areas with comparatively low potential for conflict and controversy in an effort to help California meet its ambitious renewable energy goals in a timely manner.

Areas to Prioritize for Siting

- Lands that have been mechanically disturbed, i.e., locations that are degraded and disturbed by mechanical disturbance:
  - Lands that have been "type-converted" from native vegetation through plowing, bulldozing or other mechanical impact often in support of agriculture or other land cover change activities (mining, clearance for development, heavy off-road vehicle use).[1]
- Public lands of comparatively low resource value located adjacent to degraded and impacted private lands on the fringes of the CDCA:[2]
  - Allow for the expansion of renewable energy development onto private lands.
  - Private lands development offers tax benefits to local government.
- Brownfields:
  - Revitalize idle or underutilized industrialized sites.
  - Existing transmission capacity and infrastructure are typically in place.

- Locations adjacent to urbanized areas:[3]
    - Provide jobs for local residents often in underserved communities;
    - Minimize growth-inducing impacts;
    - Provide homes and services for the workforce that will be required at new energy facilities;
    - Minimize workforce commute and associated greenhouse gas emissions.
- Locations that minimize the need to build new roads.
- Locations that could be served by existing substations.
- Areas proximate to sources of municipal wastewater for use in cleaning.
- Locations proximate to load centers.
- Locations adjacent to federally designated corridors with existing major transmission lines.[4]

High Conflict Areas

In an effort to flag areas that will generate significant controversy the environmental community has developed the following list of criteria for areas to avoid in siting renewable projects. These criteria are fairly broad. They are intended to minimize resource conflicts and thereby help California meet its ambitious renewable goals. The criteria are not intended to serve as a substitute for project specific review. They do not include the categories of lands within the California desert that are off limits to all development by statute or policy.[5]

- Locations that support sensitive biological resources, including: federally designated and proposed critical habitat; significant[6] populations of federal or state threatened and endangered species,[7] significant populations of sensitive, rare and special status species,[8] and rare or unique plant communities.[9]
- Areas of Critical Environmental Concern, Wildlife Habitat Management Areas, proposed HCP and NCCP Conservation Reserves.[10]
- Lands purchased for conservation including those conveyed to the BLM.[11]
- Landscape-level biological linkage areas required for the continued functioning of biological and ecological processes.[12]
- Proposed Wilderness Areas, proposed National Monuments, and Citizens' Wilderness Inventory Areas.[13]
- Wetlands and riparian areas, including the upland habitat and groundwater resources required to protect the integrity of seeps, springs, streams or wetlands.[14]
- National Historic Register eligible sites and other known cultural resources.
- Locations directly adjacent to National or State Park units.[15]

EXPLANATIONS

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[1] Some of these lands may be currently abandoned from those prior activities, allowing some natural vegetation to be sparsely re-established. However, because the desert is slow to heal, these lands do not support the high level of ecological functioning that undisturbed natural lands do.

[2] Based on currently available data.

[3] Urbanized areas include desert communities that welcome local industrial development but do not include communities that are dependent on tourism for their economic survival.

[4] The term "federally designated corridors" does not include contingent corridors.

[5] Lands where development is prohibited by statute or policy include but are not limited to:

3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

National Park Service units; designated Wilderness Areas; Wilderness Study Areas; BLM National Conservation Areas; National Recreation Areas; National Monuments; private preserves and reserves; Inventoried Roadless Areas on USFS lands; National Historic and National Scenic Trails; National Wild, Scenic and Recreational Rivers; HCP and NCCP lands precluded from development; conservation mitigation banks under conservation easements approved by the state Department of Fish and Game, U.S. Fish and Wildlife Service or Army Corps of Engineers a; California State Wetlands; California State Parks; Department of Fish and Game Wildlife Areas and Ecological Reserves; National Historic Register sites.

[6] Determining "significance" requires consideration of factors that include population size and characteristics, linkage, and feasibility of mitigation.

[7] Some listed species have no designated critical habitat or occupy habitat outside of designated critical habitat. Locations with significant occurrences of federal or state threatened and endangered species should be avoided even if these locations are outside of designated critical habitat or conservation areas in order to minimize take and provide connectivity between critical habitat units.

[8] Significant populations/occurrences of sensitive, rare and special status species including CNPS list 1B and list 2 plants, and federal or state agency species of concern.

[9] Rare plant communities/assemblages include those defined by the California Native Plant Society's Rare Plant Communities Initiative and by federal, state and county agencies.

[10] ACECs include Desert Tortoise Desert Wildlife Management Areas (DWMAs). The CDCA Plan has designated specific Wildlife Habitat Management Areas (HMAs) to conserve habitat for species such as the Mohave ground squirrel and bighorn sheep. Some of these designated areas are subject to development caps which apply to renewable energy projects (as well as other activities).

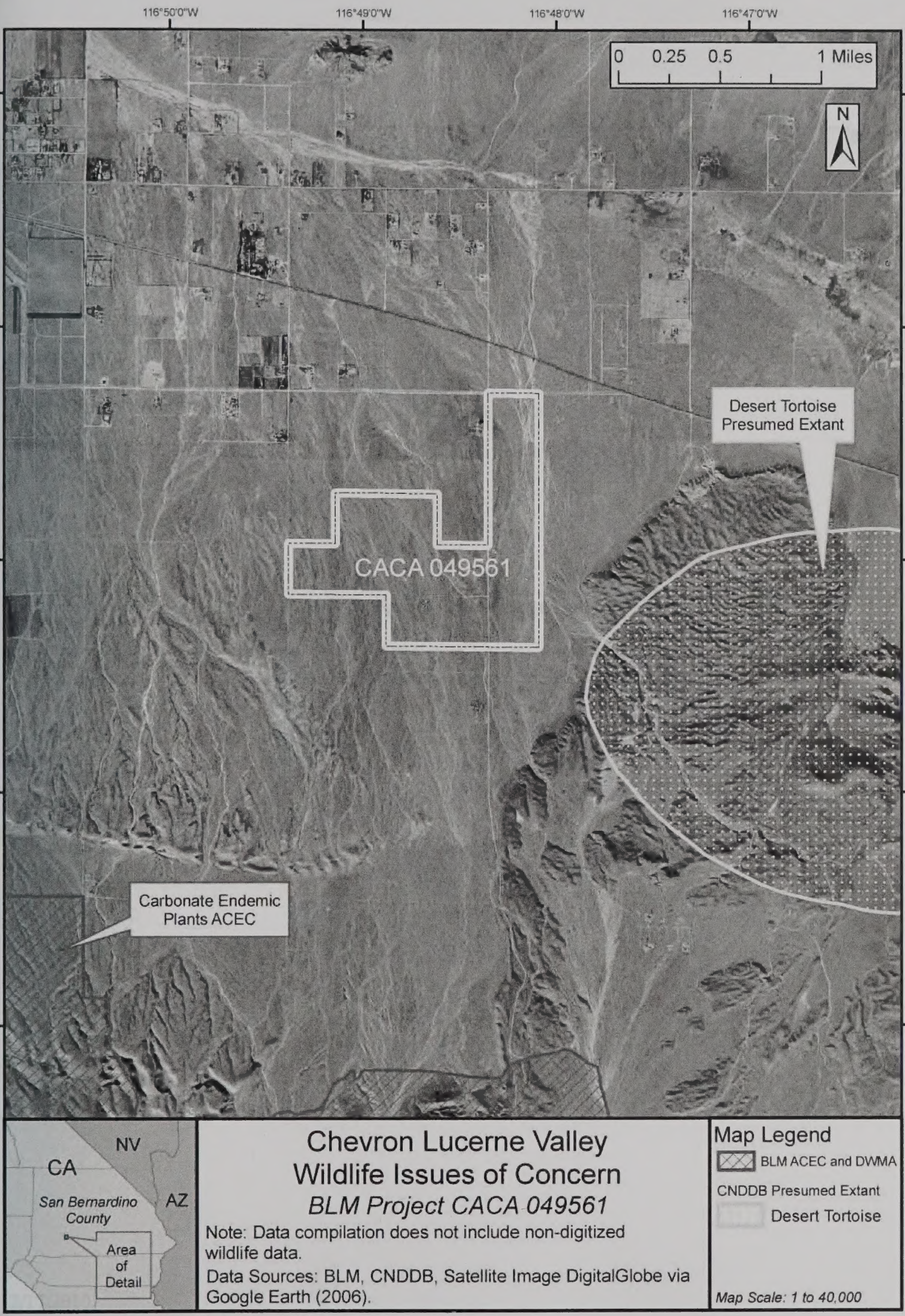
[11] These lands include compensation lands purchased for mitigation by other parties and transferred to the BLM and compensation lands purchased directly by the BLM.

[12] Landscape-level linkages provide connectivity between species populations, wildlife movement corridors, ecological process corridors (e.g., sand movement corridors), and climate change adaptation corridors. They also provide connections between protected ecological reserves such as National Park units and Wilderness Areas. The long-term viability of existing populations within such reserves may be dependent upon habitat, populations or processes that extend outside of their boundaries. While it is possible to describe current wildlife movement corridors, the problem of forecasting the future locations of such corridors is confounded by the lack of certainty inherent in global climate change. Hence the need to maintain broad, landscape-level connections. To maintain ecological functions and natural history values inherent in parks, wilderness and other biological reserves, trans-boundary ecological processes must be identified and protected. Specific and cumulative impacts that may threaten vital corridors and trans-boundary processes should be avoided.

[13] Proposed Wilderness Areas: lands proposed by a member of Congress to be set aside to preserve wilderness values. The proposal must be: 1) introduced as legislation, or 2) announced by a member of Congress with publicly available maps. Proposed National Monuments: areas proposed by the President or a member of Congress to protect objects of historic or scientific interest. The proposal must be: 1) introduced as legislation or 2) announced by a member of Congress with publicly available maps. Citizens' Wilderness Inventory Areas: lands that have been inventoried by citizens groups, conservationists, and agencies and found to have defined "wilderness characteristics." The proposal has been publicly announced.

[14] The extent of upland habitat that needs to be protected is sensitive to site-specific resources. For example: the NECO Amendment to the CDCA Plan protects streams within a 5-mile radius of Townsend big-eared bat maternity roosts; aquatic and riparian species may be highly sensitive to changes in groundwater levels.

[15] Adjacent: lying contiguous, adjoining or within 2 miles of park or state boundaries. (Note: lands more than 2 miles from a park boundary should be evaluated for importance from a landscape-level linkage perspective, as further defined in footnote 12).



Chevron Lucerne Valley Wildlife Issues of Concern

BLM Project CACA 049561

Note: Data compilation does not include non-digitized wildlife data.

Data Sources: BLM, CNDDB, Satellite Image DigitalGlobe via Google Earth (2006).

Map Legend

▨ BLM ACEC and DWMA

CNDDB Presumed Extant

⬚ Desert Tortoise

Map Scale: 1 to 40,000

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Willis, Christina J.

From: Lynnette_Elser@ca.blm.gov
Sent: Tuesday, February 16, 2010 2:33 PM
To: Willis, Christina J.
Subject: Fw: Lucerne Solar Project

Lynnette Elser
Planning & Environmental Coordinator
California Desert District Office
951-697-5233

----- Forwarded by Lynnette Elser/CASO/CA/BLM/DOI on 02/16/2010 02:32 PM -----

Edward Wood <frd750@gmail.com>

02/13/2010 10:29 AM

To lucernesolar@blm.gov
cc
Subject Lucerne Solar Project

I sincerely hope that, if this project is approved, there will be some mechanism , such as a bond, to absolutely ensure that, when this unit reaches the end of its useful life, the area will be completely cleaned up and returned to its original condition.

Comment 501

I feel that all BLM leases should include such a provision so that our descendants don't have to face the clean-ups that are now a problem with abandoned mines. It must be made impossible for such messes to be left for public clean-up in the future

Comment 502

Ed Wood
PO Box 302
Goldendale WA 98620

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From: DougAnaheim@aol.com
To: Rhollenbacher@chevron.com
Sent: 4/11/2010 9:59:47 P.M. Pacific Standard Time
Subj: Possible HQ for L:ucerne Valley solar project

Dear Mr. Hollenbacher, I sent you a previous e-mail about a property I own in Lucerne Valley that might make a great headquarters for your project. The address is 10760 Kendall Rd. What may make this property of interest to Chevron, is that there is a warehouse with 4,000 sq.ft., not including two integral storage containers providing 640 more sq.ft,.There is also a separate building with 2,500 sq.ft.of office space, with remodeled bathrooms, including two showers. The property is zoned community industrial, but residence is allowed. The property is 1.5 acres, totally security fenced, with a very large parking area in front. As I am considering all my possibilities, I would appreciate hearing back from you soon. Of course, if you are not in charge of property leasing, please forward the message. I can be reached at (714) 883-8025 If you e-mail me, please also give me a quick call. Thank you for your time and consideration. Sincerely Yours, Douglas Metcalf

Comment 503

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LUCERNE VALLEY SOLAR PROJECT

DRAFT EIS/CDCA PLAN AMENDMENT

LUCERNE VALLEY, CALIFORNIA

TUESDAY, MARCH 9, 2010

6:30 P.M.

REPORTED BY:
AMY P. SMITH
CSR #12154

Job No. 4474

MS. WILLIS: Good evening. We're going to go ahead and get started tonight.

My name is Christina Willis, and I'm the Chief Planner with Ecology and Environment. Our firm is the third-party contractor here in the EIS on behalf of BLM.

We want to welcome you tonight to the Lucerne Valley Solar Project Public Comment Meeting.

A few guidelines. Please sign in, if you have not already, at the table near the door. This is the best and the only way we have of recalling who is in attendance at the meeting.

And, also, please fill out a blue speaker card, if you'd like to make a comment tonight, or you can take one of the yellow comment forms. You can leave your comments with us tonight, or you can e-mail us your comments, or you can mail them to us later.

We are going to ask that you hold your comments for the comment period, and note that there will be no public -- excuse me -- there will be no question-and-answer session tonight.

However, we will be available for a while after the meeting is over, if you have any questions. We're here to get your comments.

A copy of this -- of tonight's presentation is going to be available on the BLM website. And the BLM website address is shown on the bottom of your meeting agenda, and it's also shown on the bottom of this project fact sheet.

And now I'll turn the meeting over to Roxie Trost.

MS. TROST: Good evening. I'd like to welcome you, too. My name is Roxie Trost, and I am the field manager for the BLM for Barstow field office. And I'd like to take just a moment and introduce you to the BLM team that we have here tonight.

We have Mickey Quilman, who is the chief of resources for the Barstow field office, and Rick Rotte, who is the realty specialist. And also from the district office we have Lynette Elser, and we have Greg Thomsen.

We also have in attendance tonight Mr. Chuck Bell, who is the president of the Lucerne Valley Economic Development Association.

And it was very helpful in our July scoping meeting to have Mr. Bell briefly summarize the other projects being completed in the area. So if he could just take a moment and do that for us, we would really appreciate it. Thanks, Chuck.

MR. BELL: I think this is the list we have. We have Boulevard Associates, which is the next area in north Lucerne Valley. That's 60 megawatts on 440 acres, and that's on private land. It's fallow ag. land.

We have Rabbit Springs Solar, which is Rabbit Springs and Barstow Road. And that's 104 megawatts. This is just panels. There's no solar thermal proposed here, all PV. And that's about 900 acres, but they're only going to use about 500 of it. That's also disturbed. That's fallow ag. land.

And Strawberry Peak Solar, which is south of Highway 18 between Lucerne and Apple Valley. That's 15 megawatts on 160 acres. And both of those used to be Edison. That's how they were brought to us. And now, I guess, they are -- First Solar bought them, paid, I guess, just to buy out the projects. I'm not sure.

Status of those, those are all County, private land, and the County is working on the -- and the consultants are working on an environmental impact report.

Daggett Wind, and that's north of Lucerne Valley. Is closer to Barstow. That's 82 megawatts on about 1500 acres, and I think that's mostly BLM. I think there's some private land involved, too. That's pretty close to the -- the access road before you get to the Barstow mountain as you're heading north.

Granite Mountain Wind, that's between Apple Valley and Lucerne Valley. I can't recall exactly the number of megawatts. It's about 15 or so turbines. I can't remember exactly how many. That's both BLM and private, so it's a joint EIS environmental impact report, and that should be out pretty soon.

We had a meeting in Lucerne Valley about a week ago or two weeks ago, and I was at that meeting in which BLM actually made quite a big presentation on that project.

West Fry Mountain Wind, that's between -- that's also Lucerne Valley, most of it is, and Johnson Valley open area. That's in the area of the Twenty-Nine Palms Marine Base expansion, so we don't know the status of that. That has been withdrawn from the new projects because of the expansion.

And, according to issues associated with the Feinstein's Desert Monument Bill, that probably -- which will likely preclude and trump any opportunity for the Marines to release the -- come west into Johnson Valley, and so those projects, we don't know what's going to happen to them.

And I guess there's a major solar project on map that the County was good enough to give us. I don't know what site they used to -- to -- to pick up the map, but there was some projects. One was a major area, a solar project called "Gasper," on BLM. Apparently, that's been cancelled. Chris can confirm it.

There's another one I guess Amber on our eastern boundary, closer to Highway 247. That one is also on BLM. Apparently, that's been cancelled out.

A lot of it might be because of the Marine Base expansion proposal.

And then Major Wind shows up on this map, and I don't know much about it. It's southwest Lucerne Valley and southeast Apple Valley, right between us, a big chunk of ground. It looks like, according to this map, is a verified wind energy project. We've not heard much about it. Right below the Forest Service.

And I'm sure there will be more pending. I don't know what to tell you. Whoever has to write impact reports and EIS's on cumulative impacts in terms of what happens in Lucerne Valley better factor in those viable projects there because when we start getting two of these constructing at one time, you tie up traffic in town, and it's going to be a mess. So that's just one issue, so...

Anything else? That's all I know about. You guys may know about more. I'm sure the County has got them coming through the assembly line right now, so --

but that's what we have, that we know about.

MS. TROST: Thank you.

MS. WILLIS: Thank you.

MS. TROST: And I'll turn it over to Greg Thomsen.

MR. THOMSEN: Hi. I'm Greg Thomsen. I'm BLM's project manager for this project.

You may recall that Chevron filed an application for a right-of-way to -- to build and operate a solar-generated facility on lands managed by BLM. Currently, we -- as Tina mentioned, we're writing an environmental impact statement, or EIS, to analyze the proposed project.

One of the things we're factoring in are a lot of comments that we received during the scoping process on this project, which was last summer.

Some of you were here in late July in this room, and we had a meeting, and we heard a number of good comments. So we've been working to -- working with Environmental and Ecology, the consultants, to factor those comments into the draft EIS.

Now is really a key time to -- to receive public view of and -- and thoughts on this draft. So we're looking forward to hearing from you either tonight or over the next two months during the public-comment period.

And we'll talk later, but there's a number of ways you can comment. But certainly we hope to hear from you tonight.

And thanks, and I'll turn this over to Ram Ambatipudi, who's from Chevron to talk more about the proposed project.

MR. AMBATIPUDI: Thank you for that.

Good evening, everyone, and thank you for coming. My name is Ram Ambatipudi, and I'm the senior business development manager for our large-scale renewable group within Chevron Energy Solutions. I work out of our Pasadena, California, office.

Most of you, I'm sorry, are familiar with Chevron. You may not fully be aware of how big a presence Chevron has in California. Chevron is headquartered in California in San Ramon.

We are, I believe, the largest private company in California, as well. We currently employ nearly 10,000 people directly in California and nearly 60,000 people indirectly, which equates to approximately 1 in 250 jobs in this state.

In -- since 2007, Chevron has spent nearly 1.8 billions dollars with small businesses, including, you know, approximately 40 percent of that with woman and minority-owned businesses.

The group that I work for and represent is Chevron Energy Solutions. We are one of the largest sustainable -- leading sustainable energy services companies in the United States providing energy efficiency renewable power and clean energy and reliability and infrastructure services.

Primarily we work with public sector and government clients. We are one of largest installers of photovoltaic -- solar photovoltaic systems in the US, with over 25 megawatts at public institutions, mostly "K" through 12 school districts and community colleges and other public sector institutions.

The -- the location of the proposed solar project is approximately eight miles east of Lucerne Valley. The -- we looked at various alternatives, and we're interested in pursuing this site for several reasons. It has a great solar resource in the region.

Also, the Southern California Edison distribution system here has spare capacity to handle a Phase I 20 megawatt project.

So the first phase would not require any new transmission or distribution lines, which -- which was very attractive. The -- the size of the parcel corresponded to the size of the project that we wanted to pursue, as well.

We're proposing to building the project in two phases. Phase I would be 20 megawatts, and then Phase II would be 25 megawatts, for a total of 45 megawatts at the site. The site is 516 acres of BLM land, and it would interconnect to Southern California Edison's 33 KB Distribution System.

We're hoping to begin construction in the fourth quarter of 2010. The project size is roughly a hundred million dollars, and we are targeting approximately 20 million dollars of that for -- for local content.

During the peak period, the construction workforce will be about a 40 -- 40 workers, we estimate. And once the plant is operational, there will be a small permanent workforce of two individuals.

With that, I'd like to turn it over to Christina Willis.

MS. WILLIS: Thank you.

The BLM has prepared a draft EIS for the Lucerne Solar Project. And we're here tonight to receive your comments.

What we intend to do is present findings of key resources evaluated in the draft EIS and take your comments on the project and the analysis.

The draft EIS describes BLM's purposes and needs, as well as Chevron Energy Solutions' purposes and needs for the proposed action.

It analyzes the project alternatives, identifies potential environmental impacts and mitigation. It describes how your concerns were treated in the analysis, and it identifies the preferred alternative.

During the scoping period, approximately 85 people attended two scoping meetings held in July of this year, and 15 provided verbal comments. In addition, 40 people mailed letters or sent e-mails about the project.

And these comments were used to form the scope of the analysis of the EIS, and they were also used in the development of the alternative, as well as modifying the project design.

A summary of the scoping comments and how they were addressed in the EIS can be found in Chapter 1 of the draft document, and more detailed information on the scoping process can be found in Appendix A of Volume II.

A majority of comments were received in the area of aesthetics and visual, air quality, biological resources, cultural resources, cumulative impacts, and project alternatives.

So based on the Applicant's right-of-way grant application, as well as the comments received during the scoping process, the draft EIS evaluated five alternatives.

Included in this list are two no-action alternatives. Under Alternative 1, the no action, no California Desert Conservation Area Plan Amendment, the right-of-way application is denied. The solar plant would not be constructed. The CDCA plan would not be amended, and current management of the site would be maintained.

Alternative 2 is similar to Alternative 1, with the exception that in Alternative 2 it does include a CDCA plan amendment to classify the right-of-way as either suitable or unsuitable for large-scale solar development.

Alternative 3 is Chevron's proposal. It includes construction and operations of a 45-megawatt solar power plant developed in two phases.

In addition, it includes improvements to Santa Fe Fire Road, and rerouting of a portion of Zircon Road to allow its continued public use. Alternative 3 also includes a CDCA plan amendment.

Alternative 4 is a modified site layout alternative. In response to the comments received during the public comment period, the draft EIS evaluated an alternative that reduces effects on visual resources.

This alternative would be the same as Chevron's proposed action with three modifications to reduce environmental effects.

It would include a 50-foot setback on either side of Santa Fe Fire Road. It would use natural vegetation as a screen along Santa Fe Fire Road, and it would design site drainage to provide a water source for that vegetative screen.

Alternative 5 is a smaller project alternative, and this alternative reduces energy output to 30 megawatts. It would also be developed in two phases. And the Phase I and Phase II area are noted by the blue and green shaded areas on the screen.

Similar to Chevron's proposal, Santa Fe Fire Road would be improved, and a portion of Zircon Road would be realigned to allow its continued public use. And, as you can see, it would require a smaller footprint.

The alternatives considered, but eliminated from detailed consideration, include alternative sites considered by Chevron Energy Solutions, both private land, as well as alternate BLM land. It includes alternative sites considered by BLM, as well as alternative renewable energy technologies, different solar technology, wind energy, and also residential roof-top solar panels.

So, as you can see, the draft EIS evaluated potential impacts to a host of environmental resources.

And I'll briefly summarize three of those key environmental issues. For air quality, the EIS found that the action alternative would generate dust and other vehicle omissions during the construction and decommission, and it included mitigation to reduce those impacts. Please see Section 3-1 and 4-1 of the draft EIS for details.

And I do need to mention that of the environmental resources that I'm mentioning, we have included boards that summarize exactly what we're talking about tonight.

For biological resources, the EIS found that the action alternatives would result in a loss of on-site vegetation and habitat for special-status species, including the desert tortoise.

And some of the desert tortoise protection measures include pre-construction surveys and clearance or tortoises from the site, installation of desert tortoise exclusionary fencing, development of off-site mitigation for effects to desert tortoise and their habitat.

For cultural resources, no cultural resources eligible for inclusion in the natural -- excuse me -- National Register of Historic Places were found to occur in the project area.

And it should also be noted that BLM has completed its consultation with the California State Historic Preservation Office.

For cumulative analysis, the EIS identified and evaluated potential cumulative effects from major past, present and reasonably anticipated future actions in the vicinity of the project. And those projects included energy generation, military uses, roadway improvements, and other local developments.

So where we are, in terms of the schedule, the draft EIS has been distributed for a 90-day public review period. And that period closes on May 19th.

The comment period was originally advertised as closing on May 13th, but you may recall there was a large snow storm in Washington D.C. in early February, which delayed the Environmental Protection Agency's publication of the notice of availability of the draft EIS. So the comment period has been extended until May 19th.

Once that comment period closes, we'll review the comments that we've received, prepare responses to those comments, and revise the environmental document based on your input and input from other agencies and organizations.

BLM will then circulate the proposed CDCA plan amendment and final EIS for a 30-day protest period. And once those protests are resolved, BLM will issue its record of decision. We're looking at late 2010 for that.

And that decision will disclose the alternative that has been selected, and it will identify all approved mitigation measures.

So we are now coming to that portion of our meeting tonight where we're ready to receive your comments.

And I want you to know that the purpose of this session is to hear from you. If you have not yet submitted a speaker card and you would like to comment, please raise your hand, and Connor Doyle will bring you a card. And when your name is called, please stand and we'll bring the microphone to you. Please state your name and spell it for our court reporter and then state your comments.

Is there anyone who has not filled out a speaker card that would like to?

MR. LEVINE: Okay. So we have two comment cards or speaker cards here. And the first person is Robyn Purchia.

MS. PURCHIA: Hi. My name is Robyn Purchia. That's P-u-r-c-h-i-a. I'm an attorney with Adams, Broad, Well, Joseph & Cardozo, and I'm here tonight on behalf of the International Brotherhood of Electrical Workers, Local 477, whose members live, work, and recreate in San Bernardino County.

We're currently in the process of reviewing the draft EIS in determining whether or not to submit written comments. But we have some initial comments here for you tonight.

Comment 901

First, the draft EIS needs to consistently describe and specifically identify the water source for the project.

The draft EIS indicates that water will be provided from an off-site source and that no new development will be necessary. But on page 3.56, the draft EIS actually says that new on-site wells may need to be developed, so the draft EIS needs to consistently describe the water source, because, right now, it's unclear where the water will be coming from.

Comment 902

It also needs to specifically identify the water source so that the public can ascertain whether that source has sufficient capacity to service the project and also how the water will be conveyed from a possible off-site source to the project area.

Comment 90

The draft EIS should also describe whether that will be potable water or non-potable water, and what Federal, State and local permits are required for the project to receive the water.

Comment 90

Secondly, the draft EIS should adequately describe the current and reasonably foreseeable projects in the area. Table 3-18-1 lists three solar projects and several residential projects. But as we heard, there are other solar projects in the area, including a solar project proposed by Cannon Solar Partners, and then the Edison PV, power plant.

Comment 90

An adequate description of all of the current and foreseeable future projects is necessary so that the project impacts to water supply are adequately reviewed and possibly the groundwater aquifer and subsidence.

Comment 905

That's just one example, though. There are other issues that come up with cumulative impacts.

Finally, we're in the process of reviewing whether the project complies with the California Environmental Quality Act.

The draft EIS indicates that a streambed

Comment 906

alternation agreement is required from the Department of Fish and Game and an encroachment permit from the Department of Transportation.

An environmental review under the California Environmental Qualify Act may be necessary for these State agencies to issue these permits.

So we suggest that the BLM immediately consult with the Department of Fish and Game and the Department of Transportation to make sure that there's no duplication of the agency's resources, the public's time and resources.

Comment 906 ctd.

So, in sum, the draft EIS should adequately describe, consistently describe the water source, the cumulative impacts, and make sure that it's complying with the State permitting requirements.

Thank you very much for this opportunity to comment.

MR. LEVINE: The next person is Bill Lembright.

MR. LEMBRIGHT: Thank you.

Bill Lembright from Lucerne Valley Market and Hardware. Bill and then Lembright, L-e-m-b-r-i-g-h-t.

Our town is being overrun with these projects. I'm bothered that so few people from Lucerne Valley are here tonight. Some of them that are even neighbors to this particular project and are very vocal

Comment 907

Comment 907

aren't here tonight, so I'm kind of wondering how the word got out about this meeting. But let me get on to my comments.

Comment 90

They're kind of general, and they have to do with our national problems right now, and I feel that applies to this very much. This Obama care is a great example and a very parallel situation to this.

We're having this stuff ramrodded on us. The public is against the government as it stands now, and the more the government -- the public wakes up, the more they're against what the government's doing, but people don't really seem to realize.

Comment 90

We need to protest, you guys. We've got to write letters. We've got to call. We've got to attend meetings, letters to the editors. We just need to get to work, because we're being overrun by this stuff.

It started basically with the global warming push. That failed. They turned it into climate change, that then turned into a scandal. That's not really being addressed. It's -- these projects are just carrying on, and climate change is in shambles.

Comment 910

Nothing's proved doesn't mean climate change doesn't happen. We know it does. We don't know that it's manmade. We have no idea if all these projects are going to do diddly squat to change anything, except they're going to raise the cost of living and tighten up our freedoms, reduce them, and also it looks like they're going to pretty well decimate our community.

Comment 910 ctd.

So it's get up and do something now. And I, for one, am -- my comment to you guys, say no to this project and no to the rest of these solar and wind projects until something gets agreed on locally and nationally that this is even practical.

Natural gas, nuclear and coal are very efficient. Wind and similar are not.

Comment 911

So that's all I have to say. And any of you from Lucerne Valley that would like to figure out ways that we can efficiently fight this stuff, please give me your e-mail address at the store, and we'll see what we come up with.

Comment 912

Thank you.

MR. LEVINE: Did you want to --

MR. BELL: Chuck Bell, B-e-l-l, Lucerne Valley Economic Development Association.

We're going to send our comments in during that -- was it 60 or 90 days?

MS. WILLIS: Ninety.

MR. BELL: Ninety.

Okay. And I appreciate you guys sending us a copy. We have one hard copy. We have one. The library

Comment 913

has one, and I -- we have an extra disk if anybody wants to -- from the community wants to borrow it. They're welcome to it.

Comment 913 ctd.

In terms of water, you're probable aware of the fact that I think your project is sitting on top of Mojave Water Agency pipeline that goes to the Morongo Basin. It's to reach our Morongo basin in Yucca and the Joshua Tree area, and there are turnouts available, so the construction water may be able to a cut deal with the Mojave Water Agency and not have to use good ground water for that purpose.

Comment 914

We are an adjudicated basin, and the water can be hauled within the basin. Domestic water could be hauled to the -- to the site.

Comment 915

You shouldn't need much after construction, unless they're going to wash the panels now and then.

We have asked -- LVEDA has asked the County and had a meeting to start looking at the whole of all of these projects because we're getting buried in the parts. Bill is absolutely right. We've just got too many of them.

And even the ones that -- if every one of these that has been filed on and EIR's and EIS's being written on, permits are in the process, if they all get approved, we basically could likely -- very likely lose

Comment 916

Comment 916 ctd

the land-use character -- our land-use configuration of this -- of our community.

Comment 917

And we just did a community plan about three years ago, and we're asking the County to help us do an energy open (sic). Now, how much of that is applied on BLM land? Probably not much. But we still need to look at BLM and the private land projects in unison cumulatively to see exactly what it's going to do to us.

Comment 918

So hopefully within that context, we can give you some pretty good comments. And anything we can do to help you make this as good a project as you can, we're available.

MR. LEVINE: If there's nobody else, then I'll hand this back to Tina.

MS. WILLIS: Thank you.

MR. LEVINE: Oh, wait a second. Is there somebody?

MS. WILLIS: We have this room until 8:30. If anybody else would like to make a public comment, we are here, and we'll wait, and we will accept your comment. We'll just give a few minutes.

MS. SHUMWAY: Okay. I'll make a comment.

My name is Dinah Shumway, D-i-n-a-h S-h-u-m-w-a-y.

Comment 919

Like Bill, I too am a little disappointed that not more people from Lucerne Valley are making comments on this. But my issues with these types of projects have more to do with public land use than they have with the specific use itself, as anybody who can read and reads local newspapers knows my position on these issues.

Comment 91

However, my issue with Chevron, for example, is, there's plenty of other projects around here on fallow private land.

Hey, listen, if private landowners want to do whatever they want and it conforms with community standards, then that should be fine for communities.

But we're talking public land here. This is public. So my issues for Chevron would be, why not find private land? Hey, if I had 600 acres, I'd invite solar people to come in because I would be charging them a rent.

Comment 92

But I am not convinced, with the information that I have, that the public is going to reap any kind of viable comparative financial benefit from these programs.

Comment 921

We -- essentially, they're getting rent practically free. We're getting 20 percent or less of installed capacity to produce energy that the taxpayers are subsidizing, and that it's going to cost us all more.

Comment 922

Now, these, I understand, are legislative imperatives, but they do not -- these projects on public land do not serve the public, in my estimation, and I think there's many other people who also feel this way. That's only one.

Comment 923

The other thing is, I'm in the mining industry. I do not see or hear or read that these projects are going to be held to the same standards that the mining industry is held to.

In the mining industry, it's -- even if this is on public land, we don't obliterate habitat, as these projects do. And when that project is done, we must -- so we have mitigation. The mitigation is one to one. One acre of land given to the government of suitable habitat or up to five, depending on what kind of habitat occupies that land prior to mining.

But I don't see that these lands are going to be mitigating to anything at all. For example, if you disturb 500 acres, it's not all fallow land. If you disturb 500 acres, well then how much of that acreage are you going to have to find and give to the taxpayers, Federal government, in some way? I don't see that that's happening.

"Mitigation" means -- I don't see anything here that says you have to re-vegetate. I would hope

Comment 924

that would be in the conditions. But, in the mining industry, if you disturb land, in 20 or 30 years, when that mine is depleted, you must re-vegetate. I don't see that happening. That's a huge expense, so I hope you're planning for that.

Comment 92
ctd.

But my basic objections to these projects are, they are not economic in any way, without taxpayer subsidies. They're more expensive. They're inefficient, and they take away public use from public lands.

Comment 92

MR. LEVINE: Thank you. Anybody else now? Okay. Thank you.

MS. WILLIS: So if there is no one else who wants to make a comment, I will now turn it over Greg to give specifics about submitting your comments.

MR. THOMSEN: Okay. Thanks again for showing up tonight, and, certainly, we had a lot larger turnout in July, but there's plenty of opportunity for people to comment and participate in this project. As Tina said, there's a 90-day period, so we look forward to hearing from a lot of you.

There are a number of ways that you can comment. You can fill out a form tonight and either give it to us tonight, or you can take one and mail it to us or drop it off at one of our offices. You can e-mail us comments. Once again, they're due on May 19th, so you should have ample time.

Chuck mentioned that we've tried to make copies of the draft environmental document readily available. In addition to being on our website and at the libraries, both the Apple Valley and the Lucerne Valley libraries, we have them in our BLM offices, available in Barstow and in Moreno Valley. We have copies of the CD. If you haven't been on our websites, if you would like a CD, we have CDs available tonight.

And if somebody decides after tonight they would like a copy it, just let us know, and we'll help you get that.

Tina mentioned our website we have. We have a number of documents posted on this project both on our California Desert District website, which shows all the renewable projects proposed on the BLM-managed lands in Southern California; and then it's also available on the Barstow field office website.

If you -- so you can check on the websites for more information or you can e-mail us or call us. Any way you want, we'll get you the information you need.

So, once again, thanks to all of you for coming out tonight. It's a pretty nippy night out there. Your comments are appreciated. We did hear from a lot of you last summer, and we expect that we'll hopefully hear from a lot of you over the next couple of months.

This does close the formal part of the meeting, and we're happy to stay around as long as you'd like. Like Tina said, we have the room set aside until nine o'clock.

So thanks again.

(At which time the proceedings concluded at 7:45 p.m.)

--oOo--

REPORTER'S CERTIFICATE

STATE OF CALIFORNIA)
) SS.
COUNTY OF SAN BERNARDINO)

I, AMY P. SMITH, a certified shorthand reporter for the State of California, do hereby certify:

That the said meeting was taken down by me in stenotype at the time and place therein stated and thereafter reduced to typewriting under my direction and that the transcript is a true and correct record of the proceedings here held.

I further certify that I am not of counsel or attorney for any of the parties hereto or in any way interested in the event of this cause and that I am not related to any of the parties thereto.

Dated this 24th day of March, 2010.

AMY P. SMITH
Certified Shorthand Reporter
License No. 12154

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Bureau of Land Management
Draft EIS Public Comment Meeting
Lucerne Valley Solar Project EIS
Lucerne Valley, CA
March 9, 2010
COMMENTS

Note: Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.

Thank you for participating in tonight's Draft EIS Public Comment Meeting for the Lucerne Valley Solar Project.
Your comments on the Draft EIS are encouraged.

Name (please print legibly): MIKE HAWKINS

Affiliation (if applicable): FRIENDS of GIANT ROCK OHV CLUB

Phone: 760 365 5983 Email: MPHODH2@WMCONNECT.Co

Mailing Address: 57273 IVANHOE DR

City, State, Zip: YUCCA VALLEY CA.

COMMENTS:

Comment 926

I THINK THE LANDS EAST of THE 29 PALMS MARINE BASE WOULD BE BETTER SUITED TO RENEWABLE ENERGY ENDEVERS — IT WOULD CAUSE LESS IMPACT ON ANY NEARBY COMMUNITY IT IS ALLREADY ~~B~~ SERVING FOR SIMLAR PURPOSES

I THINK A NATIONAL MANUMENT IN THAT AREA IS ILL ADVISED

Turn in Comments during this meeting or
Send comments to: BLM California Desert District Office, attn: Greg Thomsen, Program Manager,
22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553 or by e-mail at LucerneSolar@blm.gov

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33

Bureau of Land Management
Draft EIS Public Comment Meeting
Lucerne Valley Solar Project EIS
Lucerne Valley, CA
March 9, 2010
COMMENTS

Note: *Before including your address, telephone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. All submissions from individuals identifying themselves as representatives or officials of organizations or businesses will be made available for public inspection in their entirety.*

Thank you for participating in tonight's Draft EIS Public Comment Meeting for the Lucerne Valley Solar Project.
Your comments on the Draft EIS are encouraged.

Name (please print legibly): Millie Rader

Affiliation (if applicable): LVEDA, MAC

Phone: 760 220-3430 Email: millierader1@yahoo.com

Mailing Address: 32600 Spinel Rd.

City, State, Zip: Lucerne Valley, CA 92356

COMMENTS:

Comment 9

We live here because we enjoy the desert views. I personally ask that you take your project to another area, preferably an area that is not inhabited by humans.

Along with all of the impacts considered in this project, please consider the impacts on those of us who pay property taxes for the priviledge of living in this clean, beautiful desert.

Thank you for your consideration.

—Millie

Comment 928

Turn in Comments during this meeting or
Send comments to: BLM California Desert District Office, attn: Greg Thomsen, Program Manager,
22835 Calle San Juan de Los Lagos, Moreno Valley, CA 92553 or by e-mail at LucerneSolar@blm.gov

Appendix N
BLM Responses to Comments

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BLM RESPONSES TO COMMENTS

Appendix N provides BLM responses to public comments on the Chevron Energy Solutions Lucerne Valley Solar DEIS. Complete comments and context can be viewed in the original letters, e-mails, and the transcript of DEIS Public Comment Meeting (Appendix M), which have been annotated to identify specific comments and assertions. All public comments received are included in Appendix M.

The procedure for locating a specific comment and response in Appendix N is as follows: As comment documents were received, each comment was assigned a three-digit document number. Comments in documents received in the form of a letter were assigned sequential numbers starting with 001; comment in documents received in the form of e-mail messages were assigned sequential numbers starting with 501; oral and written comments provided during the public comment meeting were assigned sequential numbers starting with 901. All comment documents received during the public comment period were cataloged in this manner and are being considered in preparing the Final EIS.

The responses to comments can be tracked in Table N-1 below.

Table N-1. Log of DEIS Comments Received

Unique Comment Numbers	Date Received	Agency, Organization, or Individual
Comment Letters		
001	3/5/2010	Mojave Desert Air Quality Management District
002-006	3/3/2010	CalTrans, District 8
007-014	5/20/2010	Defenders of Wildlife
015-020	5/13/10	San Bernardino County
021-147	5/20/10	Adams Broadwell Joseph & Cardozo, Attorneys at Law
148-178	5/27/10	Lucerne Valley Economic Development Association
179-182	5/18/10	Chevron Energy Solutions
183	5/20/10	Chevron Energy Solutions
184-241	5/20/2010	United States Environmental Protection Agency
242-252	5/13/10	Natural Resources Defense Council, Sierra Club, and The Wilderness Society
Emails		
501-502	2/13/2010	Edward Wood
503	4/11/2010	Douglas Metcalf
Public Meeting (Oral Comments)		
901-906	3/9/2010	Adams Broadwell Joseph & Cardozo, Attorneys at Law
907-913	3/9/2010	Bill Lembright
914-919	3/9/2010	Chuck Bell, Lucerne Valley Economic Development Association
920-925	3/9/2010	Dinah Shumway
Public Meeting (Written Comments)		
926	3/9/2010	Mike Hawkins
927-928	3/9/2010	Millie Rader

Comment responses in Appendix N are presented using the following format:

Comments
The specific comment or assertion requiring a response is included in this field. The complete comment and context can be viewed in Appendix M.

Responses
BLM's response to the specific comment or assertion appears in this field.

Letters

Comment Number 001
Comment
The District (Mojave Desert Air Quality Management District) has reviewed the environmental documentation for the project and concurs that the proposed mitigation measures for Air Quality (MM AQ-1 and MMAQ-2) represent feasible mitigation.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 002
Comment
It is unlikely that Santa Fe Fire Road is a county maintained road and considered as a legal access to SR-247. We recommend that the Applicant consult with the County of San Bernardino Land Development, Land Use Services Department and this Office to warrant a legal access to SR-247 and county maintained road.

Response
The County of San Bernardino Land Development, Land Services Department, and the Department of Public Works were contacted to determine whether Santa Fe Fire Road is a county-maintained road and considered as legal access to SR-247. It is not a county-maintained road. However, as described in Section 1.5, the Applicant could be required to obtain an encroachment permit before construction begins. Santa Fe Fire Road is legally accessed from SR-247.

Comment Number 003
Comment
Design and construction plans to establish Santa Fe Fire Road shall meet county's standards and connection to SR-247 shall meet Caltrans Highway Design Manual. Review and approval of such plans are contingent to Encroachment Permits.

Response
As described on Table 1-2 of the DEIS, Major Permits, Approvals, and Consultations, all action alternatives could require an encroachment permit, and the Applicant would be responsible for obtaining all permits and approvals required to implement any of the authorized activities.

Comment Number 004
Comment
When improving Santa Fe Fire Road, all existing tributary areas, area drainage facilities and runoff volumes having an impact to SR-247 must be identified and analyzed. Hydrology study should be considered.

Response
The Hydrology Study for the Lucerne Solar Project (January 2010), prepared by Westwood Professional Service, Inc., has been submitted to the BLM and is included in Appendix O of the Final EIS. No impacts on SR-247 have been identified.

Comment Number 005
Comment
The construction of said Project will be completed in two phases which would result in short-term increases in traffic volume of a maximum of 90 trips per day (45 morning and 45 evening trips) due to the construction labor force assuming they all drive separately. This volume is less than significant

Response
The text has been revised to say that construction of both phases of the project would result in short-term increases in traffic volume of a maximum of 90 trips per day (45 morning and 45 evening trips) due to the construction labor force (assuming they all drive separately) and approximately 20 trips (10 inbound, 10 outbound) for delivering construction equipment and supplies to the site.

Comment Number 006
Comment
The project should address the number of truck trips per day pertinent to delivering the materials to construct the solar project. The State is the owner and operator of SR-247 and is concern about the impact that the delivery trucks will have onto the facility during the construction phases.

Response
See Response to Comment 005.

Comment Number 007
Comment
Defenders strongly supports the emission reduction goals found in the Global Warming Solutions Act of 2006, AB 32, including the development of renewable energy in California. We also recognize that to succeed in meeting State and Federal mandates for generation and utilization of renewable energy, some priority projects will be located on public lands managed by the Bureau of Land Management (BLM).

We urge that in seeking to meet our renewable energy portfolio standard in California, project proponents locate and design their projects in the most sustainable manner possible. Thus, renewable energy projects should be placed in the least environmentally harmful locations, near existing transmission lines and on or adjacent to already disturbed lands including idle agricultural fields, industrial sites, previous mining sites and lands with little or no long-term potential for sustaining healthy biological resources. Based on our review of the project site and the DEIS, we believe this project meets many of these "sustainability" criteria.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

As noted in Section 2.3 of the DEIS, the Applicant used similar criteria in selecting the proposed action site during the pre-screening process before submitting the right-of-way application to the BLM.

Comment Number 008
Comment
Chevron Energy Solutions applied to the Bureau of Land Management (BLM) for a right-of-way on public lands to construct a solar photovoltaic power plant facility on approximately 516-acres of BLM managed land eight miles east of the community of Lucerne Valley. When completed the facility will generate 45 megawatts of electricity. The project proponent appears to have identified a site with excellent solar resources, close to existing transmission and other infrastructure, and with limited biological conflicts.

Chevron should be commended for their efforts in working closely the BLM staff in identifying this "sustainable" site for their proposed project.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 009
Comment
Based on our field inspection of the proposed project site, an in-depth knowledge of the California Desert Conservation Area Plan, as amended, and review of the DEIS, we considers Alternative 3 (Proposed Action) or Alternative 4 (Modified Site Layout) appropriate. Either of these alternatives would result in an environmentally acceptable and sustainable project that generates electrical power using solar energy, and would contribute to the State and Federal mandates for generation utilization renewable energy.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 010
Comment
The proposed project is located on a relatively small and isolated parcel of public land surrounded on three sides by private land. Paved Highway 247 and an existing SCE transmission line is very near the proposed project area. We noticed that public lands within the project boundary east of the Santa Fe Fire Road have been mechanically altered in several areas, probably associated with former mining claim assessment work.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 011
Comment
With regard to species and habitat, the proposed project site supports a natural plant and animal community comprised largely of common species of plants animals, with a relatively low number of BLM sensitive or special status species. The threatened Desert Tortoise occurs in the area in low densities, and one Desert Tortoise was observed within the extreme southeastern corner of the proposed project area, and a few Desert Tortoises were observed in this same general area but outside the project boundary within the surveyed buffer zone. We do not consider this an insurmountable issue for the project developer. It is essential, however, that the BLM consult with the U.S. Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act, 16 U.S.C. § 1536(a) (2), and if necessary obtain an incidental take permit. Avoidance of Desert Tortoises in this area by a slight modification of the project layout may prove advantageous because it may preclude the need for their relocation or translocation.

Response
On February 8, 2010, the BLM initiated consultation with the US Fish and Wildlife Service, in accordance with Section 7 of the Endangered Species Act, 16 USC, § 1536(a) (2). The Biological Opinion for the Lucerne Valley Chevron Solar Project, San Bernardino, California (3031 [P] CA-680.33) (8-8-10-F-6) has been completed and is included as Appendix K of the Final EIS. All terms and conditions associated with the Biological Opinion, as well as several desert tortoise specific minimization measures offered by the Applicant in consultation with BLM, will be made stipulations of any ROW grant which may be issued by the BLM to insure that potential impacts would be reduced to minimal levels. Given that a maximum of

three tortoises are anticipated to be directly impacted over the life of the project, the BLM concluded that a site redesign was not necessary.

Comment Number 012
Comment
In addition to the slight modification to avoid direct impact to the Desert Tortoise, the modified layout described in Alternative 4 may be advantageous to the project proponent as a means of reducing dust accumulation on PV panels generated from vehicles using the Santa Fe Fire Road, and also in providing a visual screen of natural vegetation around the perimeter of the project. We urge BLM to perform a site specific needs-analysis before determining whether or not a realignment of the Zircon trail is warranted.

Response
Regarding Alternative 4, the realignment of a portion of Zircon Road, the criteria considered when making route designations, in compliance with 43 Code of Federal Regulations (CFR), Part 8342.1, is presented in the rewritten Section 4.11 of the DEIS. Each action alternative's consistency with these criteria is presented in Sections 4.11.2.3, 4.11.2.4, and 4.11.2.5 of the DEIS.

Comment Number 013
Comment
Though we are supportive of this project, we are concerned about the DEIS' purpose and need and alternatives analysis pursuant to the National Environmental Policy Act (NEPA). See 40 C.F.R. § 1502.13; 40 C.F.R. § 1502.14. To ensure reasoned decision-making and expedited project permitting, we ask that the BLM provide a broader purpose and need statement, and determine whether or not the alternatives presented and analyzed in the DEIS constitute a reasonable range of alternatives that satisfies applicable legal requirements.

Instead of the current purpose and need statement focusing on the BLM responding to a right of way application under Title V of the Federal Land Policy and Management Act , we would recommend that the purpose and need statement focus on the need to generate and greater amounts of electrical energy from renewable energy sources so that dependency on carbon-based fuels is reduced, and to contribute to the requirement to generate certain minimum amounts of renewable energy to comply with State and federal standards.

Response
40 CFR, § 1502.13 (Purpose and Need), requires the purpose and need statement to briefly specify the underlying purpose and need *to which the agency is responding* [emphasis added] in proposing the alternatives, including the proposed action.

As noted in Section 1.1.1 of the DEIS, the BLM's Purpose and Need includes responding to Chevron Energy Solution's (CES) application under Title V of the FLPMA, BLM ROW regulations, 43 CFR, Part 2800, and other applicable federal directives, as follows: "The BLM will decide whether to approve, approve with modifications, or deny issuance of the ROW…."

BLM recognizes the benefit to developing renewable and acknowledges that there are numerous locations on which to develop renewable energy as well as many different technologies. However, contributing to the state's renewable standards is not a BLM mandate and therefore is not included in the BLM's purpose and need statement.

BLM would not undertake this EIS if not for CES submitting an application for which BLM must make a decision.

The DEIS complies with requirement 40 CFR, § 1502.14 (alternatives, including the proposed action). This regulation requires presentation of the environmental impacts of the proposal and the alternatives in comparative form and requires agencies to:

- Rigorously explore and objectively evaluate all reasonable alternatives and alternatives that were eliminated from detailed study and to briefly discuss the reasons for their having been eliminated;
- Devote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits;
- Include reasonable alternatives not within the jurisdiction of the lead agency;
- Include a no action alternative;
- Identify the agency's preferred alternative (or alternatives, if more than one) in the draft statement and identify such alternative in the final statement, unless another law prohibits the expression of such a preference; and
- Include appropriate mitigation measures not already included in the proposed action or alternatives.

The DEIS explored and evaluated a reasonable range alternatives (Sections 4.1 through 4.17) and described the reasons that some alternatives were eliminated from detailed study (Section 2.3). Substantial treatment is devoted to each alternative considered in detail, including two no action alternatives (Sections 4.1 through 4.17).

Comment Number 014
Comment
In addition, considering the relatively small size of the proposed project (516 acres) and the relatively large amount of potentially suitable and available private and public lands necessary to support the project, we recommend that the BLM re-examine its decision to categorically determine that private land alternatives are categorically unreasonable for BLM to consider and analyze. Instead, we would recommend that the BLM examine a private lands alternative.

Response
An action that is on private land would not have a NEPA requirement, but would have CEQA requirements. Since this document is an EIS, developed under NEPA, and not an EIR, developed under CEQA, there is no nexus for a private land alternative.

BLM would not have authority for a development on private land, so there would not be a nexus for BLM to develop any environmental documents for that type of a project.

A Private Lands Alternative is identified in Section 2.3.1 of the DEIS, along with the reasons why this alternative was not considered in detail. This section notes, "As part of its initial study, the Applicant used several technical and business criteria to evaluate various potential sites for a solar project. These included whether the sites were located close to existing high voltage transmission lines that would allow access to the market. Because of this project's proposed generating capacity, the cost of building long interconnection lines would make it economically infeasible to construct.

"The Applicant determined that if it pursued the private land option, it would need to enter into several agreements with landowners to assemble a large enough tract to build its facility. This would have required the Applicant to enter into long-term leases without assurance that the necessary permits and approvals would be issued, which it did not believe was economically feasible. Therefore, private lands were eliminated from further consideration."

Comment Number 015
Comment
Regarding mitigation for threatened/endangered species, the County supports project development in a manner that optimizes future economic opportunity by minimizing land set-asides and instead focusing on funding conservation, habitat restoration and species recovery efforts. The DEIS in Section 4.6 is consistent with our approach by first requiring avoidance of impacts via several mitigation measures in BIO-1, BIO-6, and BIO-11, and invasive weed removal in BIO-2. Mitigation measure BIO-12 discusses compensatory mitigation and sensibly requires a 1:1 mitigation ratio for impacts to desert tortoise that may be achieved via either land replacement or an in-lieu fee.

However, rehabilitation of habitat during decommissioning is not clearly addressed in either the biological impact analysis or the Project Description, specifically Section 2.2.3.6 that describes decommissioning.

Response
Section 2.2.3.6 has been modified as follows to provide additional details on the decommission plan:

“Consistent with BLM requirements, the Applicant would prepare a detailed decommissioning plan that includes specific decommissioning procedures that both protects public health and safety and is environmentally acceptable. The BLM would have to approve the decommissioning plan before permanent decommissioning. When the BLM begins to consider decommissioning, it would contact the USFWS to determine whether additional Section 7 consultation would be appropriate. Materials used on-site would be reused at other locations, sold as scrap, or recycled whenever possible.”

Site reclamation is intended to rehabilitate the land and restore the natural function of the site. Restoration of the area to exact pre-project conditions may not be possible. A NEPA document would be written to evaluate the reclamation and rehabilitation plan and to make a decision about the specific reclamation and remediation plan.

Comment Number 016
Comment
With regard to addressing economic impacts to the County including infrastructure cost impacts and ongoing operations and maintenance costs, the County is developing a fiscal impact analysis to determine project-specific cost impacts that we will seek from project proponents. That analysis is ongoing at this time.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process. Should BLM receive this analysis prior to completing the Record of Decision, BLM will provide a summary of it in the Record of Decision.

Comment Number 017
Comment
The County supports the creation of 45 construction jobs while we recognize there will be only 3 permanent jobs created by the Project. The DEIS Section 4.15.3 discusses the economic benefits from the Project: $20 million in direct spending on wages, materials and equipment, and an additional $16.1 million in indirect and induced effects related to supplies, services and household spending. Annual direct spending is estimated at $400,000 for the 30-year life of the Project (DEIS page 4.15-7).

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 018
Comment
In terms of aesthetic impacts, this portion of State Route 247 is designated as a Scenic Route in the County General Plan. The Project utilizes an array configuration that is approximately six (6) feet high, and grading is minimized throughout, by keeping existing vegetation at a brush cut height under the solar arrays. This is lower in height than any habitable structure would be and would not block the views of mountains for drivers along State Route 247. Further, the maintenance, rather than complete elimination, of vegetation reduces the possibility of fugitive dust and softens the view of the Project. With these considerations, the Project is not inconsistent with the Scenic Route designation.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

State Route 247's designation as a scenic route is noted on several pages of the DEIS, including ES-11, ES-12, ES-22, 3.10-5, 3.12-12, 4-10-1, 4.10-2, 4.12-10, and 4.18-3.

Comment Number 019
Comment
With regard to water usage, the County policy is to require a groundwater assessment report if a project anticipates using 10 acre feet per year (AFY) or more of groundwater. The project appears to fall below that threshold for both construction phases and for operations.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 020
Comment
In terms of cumulative impacts, the County has received three (3) applications for solar photovoltaic projects in Lucerne Valley, since the BLM held Project scoping meetings in July 2009. A list of these projects and a map of their locations has been provided informally before and is also attached for your reference. We realize these projects were not included in the DEIS as the existing conditions baseline is generally established at the time of the Notice of Intent and scoping meetings.

Response
The proponents of the three proposed solar photovoltaic projects who have submitted applications to the San Bernardino County are those for Strawberry Peak, which is 13.5 miles from the project, Boulevard Associates Next Era, which is 11 miles from the project site, and Rabbit Springs Solar, which is 7.7 miles from the project site. Cumulative effects are evaluated in terms of the specific resource at the appropriate scale, so the boundaries of the Cumulative Effects Study Areas (CESAs) will vary by resource. For each resource, the BLM determined the extent to which the environmental effect could be reasonably measured and then used the appropriate geographic scale to include the effect on each resource. However, some project-related impacts affect a number of environmental resources across the same area, so in these instances, CESA boundaries were left identical for multiple resources where it seemed reasonable and prudent to do so. The boundaries of these CESAs have been set to ensure that all reasonably expected effects are identified and analyzed. Two of these projects were within the CESA boundaries and have been included in the cumulative effects analysis in Chapter 4 of the FEIS.

Comment Number 021
Comment
As explained more fully below, the DEIS does not comply with the requirements of NEPA, or the California Environmental Quality Act ("CEQA") for required discretionary approvals by California State

agencies. Therefore, the BLM may not approve the CDCA Plan amendment or ROW until an adequate joint DEIS/Environmental Impact Report ("EIR") is prepared and circulated for public review and comment.

Response
The BLM's DEIS and FEIS have been developed consistent with NEPA regulations promulgated by the Council on Environmental Quality for implementing the procedural provisions of the National Environmental Policy Act (NEPA, 40 CFR, 1500-1508), the Department of the Interior's NEPA regulations (43 CFR, Part 46), the BLM NEPA Handbook (H-1790-1), Sections 201, 202, and 206 of the Federal Land Management Policy Act (FLPMA; 43 CFR, 1600), and the BLM Land Use Planning Handbook (H1601-1). For clarity, as Federal Agency, the BLM is required to comply with NEPA, and is not subject to CEQA requirements. This document is not a CEQA document. BLM acknowledges that a CEQA compliant document will be required for decision under state or local jurisdiction. CEQA does not apply to BLM actions.

Comment Number 022
Comment
The members of Local 477 build, maintain, and operate conventional and renewable energy power plants in San Bernardino County. Individual members of Local 477 work in areas affected by environmental degradation and public health and safety risks from industrial development. Members also live in and use areas that will suffer the impacts of projects related to power plant development, including noise and visual intrusion, water and soil pollution, and destruction of archaeological or wildlife areas. Environmental degradation jeopardizes future jobs by causing construction moratoriums, eliminating protected species and habitat, using limited fresh water and putting added stresses on the environmental carrying capacity of the State. This reduces future employment opportunities. In contrast, well designed projects that reduce environmental impacts of electrical generation improve long-term economic prospects. The EIS authors considered the types of impacts referenced in this comment.

Response
Section 4.0 of the DEIS, Environmental Consequences, is dedicated to assessing and analyzing the potential direct, indirect, cumulative, and residual effects on the human, physical, and natural environments that could result from implementing the Proposed Action and its alternatives.

Comment Number 023
Comment
The DEIS for this Project is wholly inadequate, because it fails to consider, among other impacts, the cumulative effects in the region that will cause environmental degradation. At least three of the proposed projects may be located within six miles of the Project, totaling 31,752 acres of land devoted to solar projects in a six-mile radius. The proposed Project will unavoidably tax the State of California's limited air, water, land, biological and cultural resources and transmission capacity to a potentially significant cumulative extent. The final toll taken by this historic energy boom on California's environment, public health and natural resource base may not be known for several years or longer, but currently available and substantial evidence shows that the effects will be severe. Based on these concerns, Local 477 and its members have a strong interest in ensuring that this Project complies with all applicable federal, State and local laws and regulations.

Response
Section 3.18 of the document, Cumulative Projects, discusses past, present, and reasonably foreseeable projects within the region of influence that could contribute to cumulative effects of the proposed project.

Table 3.18-1 lists these potential cumulative projects, including their location, size, status, and resources potentially affected. This list includes the three solar energy projects referenced, totaling approximately 31,236 acres.

Each project is identified by a map number, keyed to Figure 3.18-1. This figure shows the proposed action site and indicates the location of the potential projects contributing to the cumulative effects scenario.

A detailed discussion of cumulative effects of the proposed action and alternatives is presented by resource in Section 4.0, Environmental Consequences of the DEIS. The FEIS addresses the resources mentioned in this comment. Applicable plans, policies, and regulations are considered, by resource, in the Affected Environment section (Chapter 3) of the FEIS.

Comment Number 024
Comment
As these comments will demonstrate, the DEIS is fatally deficient and must be substantially revised and recirculated for further public review and comment before it may be finalized. We have prepared these comments with the assistance of Dr. Oliver Seely (water use), Jim Cornett, M.S. (biological resources impacts), T'Shaka Toure, M.S. (hydrology impacts) and Matt Hagemann, P.G. (hazardous soils). Their comments and qualifications are appended hereto as Attachment A ("Seely Comments"), Attachment B ("Cornett Comments"), Attachment C ("Toure Comments") and Attachment D ("Hagemann Comments"). Please note that their comments supplement the issues addressed below and should be addressed and responded to separately.

Response
Responses to Comments in Attachments A through D are provided separately. The BLM's DEIS and FEIS have been developed consistent with NEPA regulations promulgated by the Council on Environmental Quality for implementing the procedural provisions of NEPA (40 CFR 1500-1508); the Department of the Interior's NEPA regulations (43 CFR Part 46); the BLM NEPA Handbook (H-1790-1); Sections 201, 202, and 206 of FLPMA (43 CFR 1600); and the BLM Land Use Planning Handbook H1601-1.

Comment Number 025
Comment
NEPA's Purpose and Goals:

NEPA has two basic requirements, neither of which the DEIS satisfies:

First, NEPA requires that agencies take a "hard look" at the environmental consequences of a proposed action. A hard look is defined as a "reasoned analysis containing quantitative or detailed qualitative information." The level of detail must be sufficient to support reasoned conclusions by comparing the amount and the degree of the impact caused by the proposed action and the alternatives.

Response
The DEIS takes a "hard look" at the environmental consequences of the Proposed Action. Section 4.0, Environmental Consequences, is solely dedicated to assessing and analyzing the potential direct, indirect, cumulative, and residual effects on the human, physical, and natural environments that could result from implementing the Proposed Action and its alternatives. In addition, Table 4.18-1 provides a comparison summary of effects of the proposed action and alternatives.

Comment Number 026
Comment
Second, NEPA review makes information on the environmental consequences of a proposed action available to the public, which may then offer its insight to assist the agency's decision-making

Response
The BLM has complied with the public review requirements, as described below.

- Section 5.0, Consultation and Coordination, of the DEIS describes the pubic participation process in the development of this DEIS;
- Sections 5.1.1, 5.1.2, and 5.1.3 summarize distribution of the Notice of Intent for the EIS, as well as the public scoping process and responses. Appendix A, Public Scoping Summary Report, of the DEIS includes details of the scoping activities that took place to provide information to the public, along with a summary of the public comments that were received;
- Sections 5.1.4 and 5.1.5 provide details on distribution of the DEIS, which was circulated for a 90-day public review period on February 12, 2010.

A public meeting to receive comments on the DEIS was held on March 9, 2010, in Lucerne Valley. Copies of the DEIS were made available on the BLM Web site, at the BLM Barstow field office, and the California Desert District office. Copies of the DEIS were also available at the Apple Valley and Lucerne Valley public libraries.

Comment Number 027
Comment
Lack of complete, accurate and consistent information in the DEIS precludes an informed comparison of the alternatives and an analysis of the Proposed Action.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 028
Comment
The BLM failed to take a hard look at all of the Project's impacts.

Response
See response to Comment 025.

Comment Number 029
Comment
The BLM impermissibly limited its alternatives analysis by relying on an arbitrarily narrow purpose and need statement.

Response
The CEQ regulations direct that an EIS "…shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 CFR, 1502.13). In compliance with this regulation, Section 1.1 of the DEIS (pp. 1-1 and 1-2) describe the BLM's purpose and need for the Lucerne Valley Solar Project EIS. Specifically, the BLM's purpose and need is to respond to CES's application under Title V of FLPMA (43 USC, 1761) for a right-of-way grant to construct , operate, and decommission a solar generation facility and associated infrastructure in compliance with FLPMA, BLM ROW regulations, 43 CFR, Part 2800, and other applicable federal laws. This section also notes that the BLM will decide whether to approve, approve with modification, or deny issuance of a ROW grant to CES for the proposed solar project.

Comment Number 030
Comment
The BLM violated NEPA's integration requirement by not conducting joint review under both NEPA and CEQA.

Response
The CEQ regulations (40 CFR 1506.2[b]) encourage federal agencies to be joint leads with state and local agencies when two agencies have approximately equal components of a proposal being considered. Section 1.4 of the DEIS summarized the federal, state, and local policies, plans, and laws that apply to the Proposed Action and alternatives. In addition, Table 1-2 lists the major permits, approvals, and consultations that would be required before any of the action alternatives could proceed. The state and local agencies listed on Table 1-2 have approval authority over "limited portions of the Proposed Action and alternatives," such as the California Department of Fish and Game's consideration of the Section 1602 Stream Alteration Agreement or the Regional Water Quality Control Board's consideration of the Section 401 Water Quality Certification. Therefore, preparation of a joint environmental document is not required. However, as shown in Section 5.2.1 of the DEIS, federal, state, and local agencies were consulted during preparation of the EIS.

The County of San Bernardino declined the CEQA lead role because they determined that the County did not have a decision to be made. California Department of Fish and Game also declined the CEQA lead role. BLM was unable to locate a CEQA lead agency in order to write a joint document.

Comment Number 031
Comment
The DEIS precludes a meaningful analysis of the Project, and the BLM must prepare and recirculate a joint DEIS/EIR before making a decision

Response
See Response to Comments 021 and 030.

Comment Number 032
Comment
The DEIS contains incomplete, inconsistent and inaccurate information that precludes a meaningful comparison of the alternatives and understanding of the Proposed Action. This violates the basic requirements of NEPA. The BLM must revise the DEIS to provide a reasonable, good faith and objective presentation of the affected environment and environmental consequences of the Proposed Action and its alternatives.

Response
The DEIS provides complete, consistent, and accurate information about the Proposed Action and alternatives, the affected environment, as well as the direct, indirect, cumulative, and residual effects of the Proposed Action and alternatives.

Comment Number 033
Comment
The DEIS completely fails to disclose BLM's required consultation under the Endangered Species Act ("ESA") with the United States Fish & Wildlife Service ("USFWS") for the federally and State threatened desert tortoise.

Response
The BLM's requirement to consult with the USFWS is detailed throughout the DEIS.

Section 1.4 of the DEIS summarizes the federal, state, and local policies, plans, and laws that apply to the EIS and includes the Endangered Species Act.

Table 1-2, Major Permits, Approvals, and Consultations, presents a list of the major permits, approvals, and consultations required, including those required by USFWS and CDFG. It specifically notes the Section 7 consultation and Biological Opinion required under the Endangered Species Act. The mitigation measures in Section 3.6 of the FEIS fully incorporate all terms and conditions of the Biological Opinion which was issued on June 10, 2010. This Biological Opinion is included in the Appendix to the FEIS.

Page 4.6-16 of the document states “The Applicant has completed consultation with the USFWS and a Biological Opinion has been released by USFWS. All terms and conditions associated with these consultations would be implemented.” Consultation under the California Endangered Species Act has not been concluded between the Applicant and California Department of Fish and Game as of the writing of this FEIS. However, as indicated in the Section titled: *Effect BIO-8: Loss of desert tortoise or loss of habitat for desert tortoise* all terms and conditions associated with this consultation shall be implemented.

Section 5.2.1 also notes that the BLM consulted with the USFWS and CDFG during preparation of the EIS. The Biological Assessment is located in Appendix C. The Biological Opinion is located in Appendix K.

Comment Number 034
Comment
The DEIS also completely fails to analyze the USFWS’s potential issuance of a biological opinion and incidental take permit under Section 7 of the ESA.

Response
The need for a Biological Opinion and consultation under Section 7 of the Endangered Species Act is described in Section 1.4.1, Relationship to Federal Policies, Plans, and Programs, of the DEIS and on Table 1-2, Major Permits, Approvals, and Consultations, of the DEIS. In addition, consultation with the USFWS and CDFG is described on page 4.6-16 of the DEIS, which indicates that a Biological Opinion has been released by USFWS and that all terms and conditions associated with these consultations would be implemented.

The BLM initiated consultation with the US Fish and Wildlife Service, in accordance with Section 7 of the Endangered Species Act, 16 USC, § 1536(a) (2), on February 8, 2010. The Biological Opinion for the Lucerne Valley Chevron Solar Project, San Bernardino, California (3031 [P] CA-680.33) (8-8-10-F-6) has been completed and is included as Appendix K of the Final EIS. All terms and conditions associated with this Biological Opinion have been integrated into the avoidance and minimization measures found in Section 4.6 of the FEIS.

Comment Number 035
Comment
There is no indication in the DEIS or its appendices that the BLM has initiated consultation under Section 7 of the ESA, or that the DEIS reviews the environmental effects of the USFWS’s issuance of a Biological Opinion and incidental take permit. The Biological Opinion concludes with a “no jeopardy” determination for the Proposed Project – the USFWS concludes that the project in the preferred alternative would not jeopardize the continued existence of desert tortoise.

Response
See response to Comment 034.

Comment Number 036
Comment
Because desert tortoises have been found on the site, and the Project will clearly impact the species, the BLM must undertake Section 7 consultation.

Response
See response to Comment 034.

Comment Number 037
Comment
The DEIS states that the Applicant has completed consultation with the USFWS and the California Department of Fish & Game (“CDFG”) and that all terms and conditions associated with these

consultations would be implemented. However, the DEIS and its appendices provide no evidence to support this statement, and no evidence that the BLM has consulted with the USFWS.

Response
See response to Comment 034. CES is in direct consultation with California Department of Fish and Game. Consultation under the California Endangered Species Act has not been concluded between the Applicant and California Department of Fish and Game as of the writing of this FEIS. However, as indicated in the Section titled: *Effect BIO-8: Loss of desert tortoise or loss of habitat for desert tortoise* all terms and conditions associated with this consultation shall be implemented.

Comment Number 038
Comment
The DEIS fails to disclose any of the terms and conditions the USFWS and CDFG require the Applicant to implement.

Response
The Biological Opinion is included in Appendix K of the Final EIS. Mitigation measures BIO-1 through BIO-13 were designed in coordination with the USFWS and CDFG. The Biological Opinion concludes a no jeopardy determination for desert tortoise and reaffirms the mitigation measures presented in the DEIS. All terms and conditions as well as all conservation measures outlined in the Biological Opinion have been fully integrated into the FEIS mitigation measures.

Comment Number 039
Comment
Because the terms and conditions seem to include moving tortoises from the site, the DEIS must include a Translocation Plan with specific information including, but not limited to, the location of the translocation area, how the tortoises will be moved, when they will be moved and who will monitor their relocation.

Response
Measure MM BIO-11 in the DEIS presents desert tortoise protective measures. In addition, Section 2.5.1 of the Biological Assessment for the Chevron Solar Project Site Lucerne Valley, contained in Appendix C of the DEIS, provides additional details on the tortoise clearance surveys and relocation efforts. This section specifically notes that BLM- and USFWS-authorized biologists and desert tortoise monitors will conduct the clearance surveys. If tortoises were detected during the survey, an authorized biologist would relocate the tortoise outside the project ROW fence. Any tortoises that may be directly impacted would be relocated off site in conformance with the Biological Opinion. Since only short distance relocations would be necessary, a Translocation Plan is not required. Translocation Plans are only needed if long distance translocation is proposed. This proposed project does not include long distance translocation.

MM BIO-11 has been modified to reflect this additional detail.

Comment Number 040
Comment
The DEIS must disclose the status of BLM consultation with the USFWS, the terms and conditions imposed by the USFWS and the Translocation Plan. Without this information, it is impossible for the public to meaningfully assess the environmental effects and mitigation for impacts to the desert tortoise. Furthermore, without full public disclosure and opportunity for comment, USFWS will be required to conduct further environmental review under NEPA.

Response
See Response to Comments 034 and 39.

Comment Number 041

Comment

The BLM must accurately describe the amount of water the Proposed Action and alternatives will need during operation. The DEIS does not contain any evidence, discussion, or information to support the determination that the Proposed Action would only require, at most, 45,000 gallons of water per year during operation. The BLM must revise the DEIS to support its findings for both construction and operational water use, or acknowledge that the Project will likely require much more than 45,000 gallons of water per year during operation.

Response

During operation and maintenance, water would be used primarily for panel washing. The Applicant estimates that the panels would require washing once per year, during the summer when power prices and, correspondingly, power production, are highest. Panel washing would require between approximately 10,050 to 20,100 for Phase I and 12,470 to 25,140 gallons for Phase II, or, correspondingly, 22,520 to 45,240 gallons per year once the entire 45-MW field is built (Fotowatio Renewable Ventures 2010). Water for panel washing would be provided through a contract with one of the local large industrial companies or municipal water companies that have high capacity wells and water systems. No new water sources would need to be developed. See section 4.5.2.3 of the FEIS.

The amount of water used could vary from project to project, and is based on the specific conditions at the site and the technology that is used for the project. The estimated water use provided in the FEIS and stated above are for this specific location and utilizing the specific project technology.

Comment Number 042

Comment

Because the Project's solar panels will likely need cleaning at least twice per year, Dr. Oliver Seely estimated that the Proposed Action would require approximately 270,000 gallons per year for maintenance. Dr. Seely's estimated water use is six times more than what the BLM determined the Project would require in the DEIS.

Response

See Response to Comment 041.

Comment Number 043

Comment

Dr. Seely's estimate is further supported by the estimated water use for other PV solar projects in the region. For example, the Mitigated Negative Declaration for the Boulevard Associates Kramer Junction Project states that the 20-MW PV solar facility "shall consume a 'minimal amount' of water for the occasional cleaning of panels as they become dusty throughout the year." This "minimal amount" is approximately 150,000 gallons of water per year.

Response

See Response to Comment 041. It should also be noted that the solar technology proposed at the project site is different than the technology used at the Kramer Junction site. The comparison of water use between the two projects is not accurate.

Comment Number 044

Comment

Stephanie Tavares, an environmental reporter for the Las Vegas Sun, compared the proposed operational water use for various PV solar projects.[39] She determined that 16,689 gallons of water per MW was required yearly to clean PV solar plants. Based on this assumption, the proposed Project would need approximately 751,005 gallons of water per year for maintenance.

Response

See Response to Comment 041.

Comment Number 045
Comment
As Dr. Seely's analysis in Attachment A and additional factual data indicate, the BLM likely underestimated the Project's proposed operational water use. Because the BLM underestimated the operational water use, the BLM may have also underestimated the Project's construction water use. The BLM must either support its initial determinations with factual evidence, or recalculate the Proposed Action's water use, as well as the water use necessary for each of the alternatives. Only then will the BLM's analysis of the environmental impacts become meaningful.

Response
See Response to Comment 041.

Comment Number 046
Comment
The DEIS's description of the Project's water source is incomplete
The specific source of construction and maintenance water for the Project is not disclosed in the DEIS. The DEIS states that water may be provided through a contract with one of the local large industrial or municipal water companies, from new or existing onsite wells, or the Mojave Water Agency. The Project's environmental consequences will vary depending on the water source. Thus, the BLM must provide a complete and consistent description of the Project's water source so that the public may meaningfully assess the Project's impacts.

Response
Water for construction and operation would not be supplied from new or existing on-site wells. Section 3.5.2.3 has been corrected in the Final EIS.

Water would not be provided from the Mojave Water District. Instead, Section 3.5.1 of the DEIS states the Applicant may confer with the Mojave Water District to "ensure protection of groundwater resources and compliance with any established groundwater management plans and, if necessary, to secure permits needed for encroachment on water district easements."

As noted in Section 4.5, Water Resources/Hydrology, "The water obtained for both construction and operations would be from a permitted off-site source; therefore, it would not decrease the water supply in the Proposed Action area."

Several different sources of water may be used throughout the 30 year life of the project. Water used for this project would be from an existing permitted source and the water used for this project, combined with other source uses, would not exceed the permitted source's authorized level of use.

Comment Number 047
Comment
At this point, the BLM has completely failed to inform the public about the source of water and the environmental and public health effects from using such water for the Project. Water from an offsite source may require new infrastructure, modifications to existing infrastructure and/or additional federal, State and local approvals. The closest water company to the Project site is the Jubilee Mutual Water Company located approximately five miles away. The Golden State Water Company also provides water to the Lucerne Valley area and is located approximately 20 miles away. If the Jubilee Mutual Water Company and the Golden State Water Company do not have sufficient capacity to serve the Project, water may be provided from another water company in the desert area.

Response
Section 2.2.3.5, Operations and Maintenance, states the following on page 2-22:

"Water for panel washing would be provided through a contract with one of the local large industrial companies or municipal water companies that have high capacity wells and water systems. No new water sources would need to be developed."

Water for panel washing would be trucked to the site, and no additional federal, state, or local approvals would be required. No additional environmental effects that have not been identified in the DEIS would occur. The impacts of trucking water to the site are addressed in Section 4.13.2.3 of the DEIS. No public health effects from panel washing were identified.

See response to Comment 046.

Comment Number 048
Comment
Using water from any of these sources raises a myriad of potentially significant effects and legal issues that have not yet been addressed, including impacts on groundwater from increased extraction, impacts on State water from California's State Water Project, impacts on biological resources, land use, and air quality from construction of pipelines, availability and reliability of water supplies, legal entitlements, need for further right-of-ways, effects from trucking water to the site and others.

Response
See Response to Comment 047.

Comment Number 049
Comment
If the Project will receive water from new or existing onsite wells, the location of the wells, how the water will be pumped from the wells, when the water will be pumped from the wells, the effects of pumping water from the wells and the required federal, State and local approvals must be disclosed to the public.

Response
See Response to Comment 046.

Comment Number 050
Comment
The Project's need for large amounts of construction and operational water would likely exacerbate overdraft conditions and cause an overall decline in water levels in the region.

Response
Refer to Response to Comment 046.

Comment Number 051
Comment
Clearly, the BLM has not even begun to describe the Project's proposed water supply and the Project's affects on water resources. The BLM must provide a complete and consistent description of the Project's water source with an assessment of the Project's impacts on that source and disclose it to the public.

Response
Refer to Response to Comment 041 and 046.

Comment Number 052
Comment
The DEIS's description of the Project's impacts to drainage systems is incomplete and inconsistent The BLM must revise these inconsistencies and provide a complete description of the Proposed Action's impacts to natural drainage systems.

Response
The proposed modifications to on-site drainage systems for all action alternatives are presented in Sections 2.2.3, 2.2.4, and 2.2.5 of the DEIS. Project-related impacts on the drainage system for all project alternatives are described in Sections 4.5.2.3, 4.5.2.4, and 4.5.2.5 of the DEIS. The BLM DEIS found that impacts on the drainage system vary by alternative.

The Hydrology Study for the Lucerne Solar Project (January 2010), prepared by Westwood Professional Service, Inc., has been submitted to BLM and is included in Appendix O of the Final EIS. The study identifies the project-specific modifications and associated impacts on both on- and off-site drainage systems and presents drainage calculations, best management practices, and long-term maintenance recommendations. The findings and recommendations of the study have been added to Section 4.5 of the Final EIS.

A Stormwater Pollution Prevention Plan is included as Appendix I.

Comment Number 053
Comment
Specifically, if drainage systems will be modified, the DEIS must disclose what modification will occur, which drainages will be impacted and to what extent the drainages will be modified.

Response
See Response to Comment 052.

Comment Number 054
Comment
This is fundamental information that is required to provide the public an opportunity to meaningfully compare the Proposed Action with the alternatives. For example, to compare alternatives, the public must know whether the Proposed Action would modify the same drainages as Alternative 4. In addition, there may be an alternate site design that will impact drainages less.

Response
See Response to Comment 052.

Comment Number 055
Comment
The DEIS must also describe what fill material the Applicant will use to modify the drainages. If cement is used for bank stabilization and protection for transition and curve segments, the Project will significantly impact the ability of wildlife to utilize the surrounding area. If the Applicant will use natural substrate (i.e. compacted earthen [sic] material along with rip rap), however, impacts to biological resources may be reduced.

Response
The hydrology study identifies the project-specific modifications and associated impacts on both on- and off-site drainage systems and presents drainage calculations, best management practices, and long-term maintenance recommendations. The findings and recommendations of the study have been added to Section 4.5 of the Final EIS.

A Stormwater Pollution Prevention Plan is included as Appendix I.

Comment Number 056
Comment
The BLM's failure to provide even basic information on impacts to drainages precludes meaningful public input on the Proposed Action's affect on drainages and on alternatives to the Proposed Action. The BLM must provide this information so that it can take a hard look at impacts to the drainages and provide mitigation where feasible.

Response
See Response to Comment 052.

Comment Number 057
Comment
The BLM failed to describe whether storm water will be drained from the site through newly constructed drainages or through natural onsite drainages. This information is necessary for a complete analysis. For example, if the Applicant will construct designated storm drains, additional grading will be necessary. If natural onsite drainages are used, the DEIS should discuss their carrying capacity and the possibility of overflow. The BLM must provide this information so that all of the Project's impacts can be assessed.

Response
See Response to Comment 052.

Comment Number 058
Comment
The BLM must prepare a Hydrology Report and finalize the Storm Water Pollution Prevention Plan. The BLM must provide the public with a complete and final Hydrology Report and Storm Water Pollution Prevention Plan (SWPPP) before approving the Project.

Information normally contained in these reports helps the public understand and assess the water table, the natural flow pattern onsite and offsite and the Applicant's measures to address flooding.

Response
See Response to Comment 052.

The Hydrology Study for the Lucerne Solar Project (January 2010), prepared by Westwood Professional Service Inc., has been submitted to BLM and is included in Appendix O of the Final EIS.

A draft SWPPP is included as Appendix I. The SWPPP will not be final until adopted and certified by the construction contractor(s) responsible for its implementation and the State Water Board has issued the Waste Discharge Identification Number (WDID No.).

Comment Number 059
Comment
The DEIS's description of the Project's Restoration Plan is incomplete. The BLM must provide a complete and consistent description of the Project's Restoration Plan before it issues a decision. The Biological Assessment references "an approved" Restoration Plan. However, the DEIS and its appendices contains no Restoration Plan to enable the public to meaningfully review the Project's effects.

Response
The restoration plan is not complete at this point in time. A general restoration plan will be approved prior to the Record of Decision being issued. A detailed restoration plan, which would be subject to NEPA compliance, would be written many years in the future. It is anticipated that restoration techniques will change greatly over the next thirty years. Writing a detailed plan that would not be implemented for thirty years and would be rewritten prior to implementation is not necessary.

Comment Number 060
Comment
The BLM must disclose the Applicant's Restoration Plan so that decision makers and the public will understand all of the Proposed Action's impacts. For example, if restoration of the site requires revegetation, the Project may impact native vegetative communities. Project sites in California are often revegetated with creosote bushes from Texas. Creosote bushes from Texas, however, are biologically different from California creosote bushes, and may overtake the native species. Information about what plants will be used for revegetation, how drainages will be restored, whether wildlife will be reintroduced and what other restoration activities will be implemented, is necessary for a meaningful impacts analysis.

Response
See Response to Comment 059.

Comment Number 061
Comment
The DEIS inconsistently describes the Project site as both occupied and vacant.

The DEIS inconsistently describes the Project area as both occupied and vacant and fails to clearly identify the location of structures. The DEIS states that "[t]here are several occupied buildings of unknown origin that are likely not permitted and graded dirt access roads, indicating there are residents living on the property illegally." The DEIS also states, however, that "[t]he site is undeveloped and vacant and has never been officially used for any commercial, agricultural, or industrial purposes."
If there are occupied buildings on the Project site, the BLM must disclose where the buildings are, what hazardous materials the buildings contain and whether the occupants of the buildings will leave the Project site before construction.

Response
DEIS page 3.9-2 states "The site is almost entirely vacant and undeveloped; however, there are several occupied buildings of unknown origin that likely not permitted, as well as graded dirt access roads, indicating there are residents living on the property illegally." This statement was removed from the FEIS. At the time the DEIS was written there were residential related structures on BLM managed land. These structures included a mobile home. There were no hazardous materials. The structures were placed on BLM managed land by mistake. The owner of the structures purchased a piece on property nearby and accidentally placed his home on the wrong parcel of land. This was a trespass on federal land. The owner has since moved his structures onto his own property. No remaining material, including hazardous material, is located on the project site due to this trespass.

Comment Number 062
Comment
For example, if there are existing structures south of Zircon Road, development of Alternative 5 would not require the destruction and removal of these structures. However, if the buildings are located north of Zircon Road, destruction of the buildings would be necessary under every action alternative, and workers may be exposed to asbestos, lead paint and other hazardous materials. In addition, if residents of the buildings will remain on the Project site during construction and/or operation, the DEIS should assess visual and noise impacts to onsite sensitive receptors. Depending on the location of the occupied buildings, Alternative 4 may reduce visual impacts to these onsite sensitive receptors.

Response
See Response to Comment 061.

Comment Number 063
Comment
The BLM must provide a consistent description of the Project site, so that a meaningful comparison of the alternatives and an assessment of the Proposed Action's environmental consequences are possible. The DEIS's description of the site as both occupied and vacant precludes a meaningful analysis. In addition, the DEIS's failure to describe the location of buildings precludes a meaningful analysis. The BLM must revise the DEIS to provide a consistent description that adequately compares the alternatives and evaluates the environmental impacts.

Response
See Response to Comment 061.

Comment Number 064
Comment
The DEIS's description of the Project site as mining land and an area with little or no mining activity is inconsistent. The DEIS states that "[t]he Proposed Action would be located approximately eight miles east

of the junction of Barstow Road and Old Woman Springs Road on partially disturbed mining land." The DEIS also states, however, that "[t]he Proposed Action is located in an area with little or no mining activity, and no minerals are found on the site."

Response
The Proposed Action is in a region with active mining operations. DEIS Table 3.17-1 lists 23 energy and mineral resource sites within five miles of the project area; there are no active mining operations or mining claims within the project site itself. The DEIS concludes that due to the lack of known mineral resources at the site, no effect on mineral or energy resources would occur. The actual project site is disturbed from past mining operations. There are shallow pits remaining on the site due to past mining activity.

Comment Number 065
Comment
The inconsistent description of the area as mining land with little or no mining activity is misleading to the public and affects the BLM's analysis of environmental consequences. The DEIS recognizes that Lucerne Valley has a rich mining history and that it is possible that mining claims occur within the Project area. The BLM's description of the site as having "little or no mining activity" is clearly inconsistent and misleading.

Response
See Response to Comment 064.

Comment Number 066
Comment
Furthermore, the BLM relies on this misleading statement to support its own conclusion that the Project would not restrict access to mineral resources and result in an irreversible and irretrievable commitment of mineral resources. The misleading statement, therefore, precludes informed decision-making. The description of mineral resources on the site needs to be adequately determined and consistently described so that all of the impacts will be disclosed to the public and decision makers.

Response
There are no active mining operations or mining claims within the Proposed Action site. The DEIS concludes that, due to the lack of known mineral resources at the site, no effect on mineral or energy resources would occur. However, if mining resources were to be located on site, this project would not be an irretrievable or irreversible commitment of resources. Once the project is complete and the land is reclaimed, this land could again be available for mining activities.

Comment Number 067
Comment
The DEIS's description of impacts to Joshua trees is inaccurate
The DEIS mischaracterizes the Project's significant impacts to Joshua trees. The DEIS states that no long-term direct impacts to Joshua trees are anticipated because these plants would be flagged for salvage and removed. However, the DEIS provides no support for this statement.

Response
The Applicant would work with San Bernardino County to develop a salvage plan that would address the long-term survival of yucca plant species. Specific plants would be flagged for salvage and removed. In addition, no long-term adverse indirect effects on the remaining yucca plants (e.g., due to noise, vibration, dust) are anticipated because construction and maintenance would be short term. Section 4.6.2.2 of the FEIS discussed affects to Joshua trees. It is acknowledged that some plants would be loss, and some transplanted plants would not survive.

Comment Number 068
Comment
Jim Cornett found that Joshua trees experience high rates of mortality during salvaging. Mortality typically exceeds 50% and sometimes reaches 100%.[76] As set forth in Attachment B, the BLM must reassess the long-term significant impacts to Joshua trees.

Response
See Response to Comment 067.

Comment Number 069
Comment
The DEIS's description of impacts resulting from cutting and grubbing site vegetation is incomplete and inaccurate
It is unclear from the DEIS what "activity" will affect vegetation long-term, and why the BLM could not conclude that the impact would be significant.

Response
The Applicant has modified the site treatment to eliminate brushing and mowing portions of the site. As a result of detailed engineering, the Applicant has concluded that cutting vegetation at four inches above the ground would not be practical for construction and operation of the solar facility. Vegetation would be removed, and the entire site would be rough graded. This description will be modified in the Final EIS.

Section 4.6.2.2 of the DEIS acknowledges that even brushing and mowing vegetation on the site would "result in the loss of all vegetation on the developed portion of the site." Mitigation measures MM BIO-1 through MM BIO-5 and MM BIO-13 were identified to reduce adverse effects associated with habitat loss.

Comment Number 070
Comment
The DEIS must contain a complete description of what activity will affect vegetation in the long-term. If the effects depend on the scale and intensity of mowing activities, impacts should be easy to assess. According to the DEIS, mowing will occur on 420 acres and will reduce vegetation to between six and twelve inches in height.[78] Because the scale and intensity of mowing activities is clearly defined, a biologist should be able to determine the long-term impacts to vegetation easily.

Response
See Response to Comment 069.

Comment Number 071
Comment
Mr. Cornett found that long-term impacts will be significant. Desert perennials concentrate leaves, buds, blossoms, fruits and seeds in their outer branches.[79] Mowing and grubbing activities destroy those portions of the plants.[80] Grubbing also has a greater impact than grading because there is a potential for deeper penetration of the soil by the teeth of the plow. The BLM must accurately describe the significant long-term effects to vegetation from mowing and grubbing.

Response
See Response to Comment 069.

Comment Number 072
Comment
In sum, information in the DEIS is incomplete, inconsistent and inaccurate. Courts have held that "[w]here the information in the initial EIS was so incomplete or misleading that the decisionmaker and the public could not make an informed comparison of the alternatives, revision of an EIS [was] necessary to provide a reasonable, good faith, and objective presentation of the subjects required by NEPA." The BLM must revise the DEIS to provide a reasonable, good faith and objective presentation of the affected environment and environmental consequences of the Proposed Action and its alternatives.

Response
The DEIS presents a reasonable, good faith, and objective presentation of the Proposed Action and its alternatives. Revisions have been made throughout the FEIS to clarify and provide information as requested through these comments.

Comment Number 073
Comment
The DEIS does not contain a hard look at the project's impacts.
The discussion of impacts must include both "direct and indirect effects (secondary impacts) of a proposed project." The impacts analysis must include a discussion of the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented. An agency need not speculate about all conceivable impacts, but it must evaluate the reasonably foreseeable significant effects of the proposed action. Reasonable foreseeability means that "the impact is sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision."

Response
Direct, indirect, cumulative, and residual effects for all environmental resources are contained in Chapter 4 of the DEIS, Environmental Consequences.

The "Relationship Between Short-Term Uses and Long-Term Productivity of the Environment" is addressed in Section 4.18.2 of the FEIS. Irreversible or irretrievable commitments of resources are discussed in Section 4.18.1 of the FEIS.

Comment Number 074
Comment
The DEIS does not consider all of the Project's significant and foreseeable environmental impacts to biological resources, water resources, transmission and communication systems, mineral resources, noise, hazards and cultural resources. The BLM's failure to take a hard look at the Project's impacts violates the basic requirements of NEPA. The BLM must revise its impacts analysis and issue a supplemental EIS for public review and comment.

Response
The DEIS takes a "hard look" at the environmental consequences of the alternatives. Section 4.0, Environmental Consequences, of the document is dedicated to assessing and analyzing the direct and indirect, cumulative, and residual effects on the human, physical, and natural environments that could result from implementing the Proposed Action and its alternatives. The FEIS is also available for public review.

Comment Number 075
Comment
The BLM did not consider all of the Project's impacts to biological resources. Jim Cornett, a certified wildlife biologist, reviewed the DEIS's analysis of impacts on biological resources and special status species. Mr. Cornett determined that the BLM failed to take a hard look at all of the Project's impacts. Therefore, the BLM must revise its analysis of the Project's impacts to biological resources.

Response
Section 4.6 of the DEIS considers the direct, indirect, cumulative, and residential impacts on biological resources associated with the Applicant's proposal and all project alternatives. Detailed information about potential impacts on biological resources is provided in Appendix C, Biological Assessment, and Appendix D, Comprehensive Biological Resources Assessment.

Comment Number 076
Comment
The BLM must evaluate the Project's cumulative impacts to the Desert Tortoise.

The DEIS recognizes that desert tortoises are present on the Project site and that construction and operation activities may impact the species.[89] Desert tortoises are listed as a threatened species under both the ESA and the California Endangered Species Act ("CESA"). Despite the protected status of desert tortoises, the BLM failed to take a hard look at the cumulative impacts caused by the Proposed Action and the action alternatives. The BLM must adequately evaluate the Project's cumulative effects on the desert tortoise.

Response
The project's cumulative effects on the desert tortoise is evaluated in Section 4.6.4.3 of the DEIS. This analysis includes potential impacts associated with a number of projects proposed on BLM managed land, in addition to other past, present, and reasonably anticipated future projects within the cumulative effects study area. The DEIS found that:

"For desert tortoise, no critical habitat is present within the CESA, and thus, there would be no cumulative loss of that habitat. Desert tortoise would, however, be permanently excluded from the entire 516 acre site as a result of the installation of the perimeter fence (per MM BIO-10). Therefore, the construction of the solar facility would represent a loss of 516 acres of suitable desert tortoise habitat. It is unlikely that there would be a cumulative effect from avoidance behavior due to distances between projects and varied construction schedules. Animals can move within open spaces surrounding and between these projects. Reduced overall habitat in the general area may cause increased competition. These effects would be adverse and long-term and could alter special status species population abundances, but are not expected to cause an actionable cumulative effect, such as potential extirpation or change in status."

The primary discussion of cumulative effects focuses on the Proposed Action. In addition cumulative effects from the alternatives are identified below the main discussion. A comparative analysis of potential cumulative effects for all alternatives considered in detail, including Alternative 5, is included in Section 4.6.4.3.

Also, see Response to Comment 075.

Comment Number 077
Comment
The DEIS concludes that there would be no cumulative effect, such as extirpation or change in status to desert tortoises, because they could move within the open spaces surrounding the various projects in the region.

However, desert tortoises have site-restricted populations. The inability for desert tortoises to utilize the site where they typically feed, find shelter, or breed may cause stress and territorial battles and is most likely to result in death.

Response
See Response to Comment 076. The Biological Opinion concluded with a "no jeopardy" determination for the proposed project. Also, since this project does not impact designated critical habitat for the desert tortoise, the Biological Opinion concludes that the proposed project would not adversely modify critical habitat.

Comment Number 078
Comment
Three solar project ROWs are proposed within six miles of the Project, totaling 31,752 acres of land devoted to solar projects in a six-mile radius. The BLM must analyze what impact the loss of 31,752 acres of land within a six-mile radius will have on the long-term success of the species.

The BLM must also rigorously compare the Proposed Action's cumulative effects with the reduced cumulative effects of Alternative 5 and the use of alternate sites.

Response
See Response to Comments 076 and 077. The Biological Opinion considers cumulative effects when making a jeopardy and adverse modification determination.

Comment Number 079
Comment
The BLM must evaluate the Project's impacts to the California threatened Mojave ground squirrel Construction and operation activities could significantly impact Mohave ground squirrels. The BLM must determine whether the Project may impact Mohave ground squirrels in order to mitigate impacts and comply with the CESA fully

Response
A Mohave ground squirrel assessment was conducted in May 2009 (Chambers Group 2009), but no Mohave ground squirrels were observed on the site. The DEIS found that the Mohave ground squirrel was considered to have a low potential to occur on-site based on a lack of recorded historical occurrences within five miles of the site.

The site is outside the published range of the Mohave ground squirrel, and live trappings performed nearby during other projects did not reveal their presence; therefore, trapping studies were not conducted. The nearest known occurrence of Mohave ground squirrel is over five miles west of the project site, two miles east of the junction of SR 247 and SR 18.

Impacts on Mohave ground squirrel associated with the Proposed Action are addressed in Section 4.6.4.2 of the DEIS, which stated that the Mohave ground squirrel was not observed within the Proposed Action area during field surveys. It also stated that the Proposed Action (and all action alternatives) would remove potential habitat for this species, and that Mohave ground squirrels would be adversely affected. The DEIS also found that with implementation measures MM BIO-2 through MM BIO-7 and consultation with state agencies (MM BIO-9), adverse effects on special status wildlife would be avoided.

CES is engaged in further discussions with the California Department of Fish and Game concerning the Mohave ground squirrel.

Comment Number 080
Comment
The Project may impact Mohave ground squirrels and trigger the "incidental take" provisions of the CESA. CDFG guidelines specify that surveys for Mohave ground squirrels be conducted on proposed project sites that support desert scrub vegetation and are within or adjacent to the Mohave ground squirrel geographic range.[100] The protocol mandates an initial visual survey of a project site.

Response
See Response to Comment 079.

Comment Number 081
Comment
The Project site is within the Mohave ground squirrel's range, and the species has been observed within four miles of the Project site. The Applicant conducted only one visual survey in May 2009, but failed to conduct any trapping studies on the Project site.

Response
See Response to Comment 079.

Comment Number 082
Comment
The Applicant did report that a Round-tailed ground squirrel was observed. However, Round-tailed ground squirrels are impossible to distinguish from Mohave ground squirrels during visual field surveys. Thus, the biologist conducting the visual survey may have actually observed a Mohave ground squirrel.

Response
See Response to Comment 079. Experienced biologists are able to distinguish the difference between squirrel species.

Comment Number 083
Comment
Nevertheless, according to CDFG guidelines, because no Mohave ground squirrels were definitively identified during the visual survey, the Applicant should have conducted a trapping study. However, the Applicant failed to do so. The failure to conduct trapping studies is inconsistent with CDFG guidelines.

Response
See Response to Comment 079.

Comment Number 084
Comment
Because the site provides suitable habitat for State protected Mohave ground squirrels, this species may be present on the site and significantly impacted by construction and operation activities. These activities could result in an unauthorized take under the CESA. The BLM must require the Applicant to conduct trapping surveys on the Project site so that it may adequately assess the Project's impacts and ensure compliance with the CESA.

Response
See Response to Comment 079.

Comment Number 085
Comment
In addition, the USFWS is considering listing the Mohave ground squirrel as an endangered species under the ESA. On April 27, 2010, the USFWS issued a 90 day finding on a petition to list the Mohave ground squirrel as endangered with critical habitat. If the species is listed as endangered, BLM would need to consult with USFWS and request a biological opinion and incidental take permit before conducting any activity that may harm the species. Therefore, the BLM should consult with the USFWS regarding the Project's likely take of the species in order to ensure compliance with the federal ESA.

Response
Section 3.6 of the DEIS will be updated to note the USFWS's issuance of the 90-day finding. However, the finding does not mean that the USFWS has decided to list the Mohave ground squirrel; instead, they will now conduct an in-depth review—called a 12-month finding—of all the biological information available on the species to determine whether the Mohave ground squirrel warrants listing as a threatened or endangered species under the ESA. A formal consultation is not required at this time.

Comment Number 086
Comment
The BLM must evaluate the Project's impacts to the Western Burrowing Owl
Because of BLM's failure to assume the presence of the burrowing owl on the site and the failure of the biologists to conduct a sufficient survey, the DEIS does not contain an adequate assessment of impacts to the Western burrowing owl.

Response
Three protocol-level surveys for burrowing owl were conducted for the Proposed Action, in conjunction with desert tortoise surveys, on March 24 to March 27, March 31 to April 3, and April 7 to April 10, 2009.

However, not all of the burrowing owl surveys were conducted concurrently with the desert tortoise surveys. At the request of the BLM, a protocol-level focused burrowing owl survey was conducted in June 26, 2009, at six locations that exhibited burrowing owl sign from the March/April surveys. No new sign of burrowing owls was identified during this survey.

As noted in Section 4.6.4.2 of the DEIS, although this species was not observed within the project area, all action alternatives would remove potential burrowing owl habitat. Measures MM BIO-2 through MM BIO-7 and consultation with state agencies (MM BIO 9) would avoid potential adverse impacts to burrowing owls. Mitigation measures are proposed which are consistent with those that would be required if the site were occupied by burrowing owls.

Comment Number 087
Comment
The DEIS acknowledges that suitable habitat exists on the site and that the species was observed in the area in the past. During the burrowing owl survey, excrement and regurgitated pellets were observed on and near the site that were estimated to be about two to three years old. However, no Western burrowing owls were actually observed during the surveys. Therefore, the DEIS does not contain any specific mitigation measures to ensure the protection of this species.

Response
See Comment Response 086.

Comment Number 088
Comment
Although no burrowing owls were observed during the surveys, the species may still be present on the site. According to the CDFG, a site should be assumed occupied if at least one burrowing owl has been observed occupying a burrow within the last three years. The DEIS does not state when the species was observed on the Project site in the past. However, excrement and regurgitated pellets are evidence that the species may have occupied the site within the last three years. Thus, the BLM should assume that the site is occupied by the Western burrowing owl.

Response
See Response to Comment 086.

Comment Number 089
Comment
The biologists may have also missed observing a burrowing owl because the surveys were deficient. According to Mr. Cornett, owl surveys are frequently conducted with binoculars and involve looking upward to identify flushed owls and listening for owl calls.[114] The burrowing owl surveys conducted for the Project, however, seem to have been conducted in conjunction with desert tortoise surveys. If the surveys were in fact conducted at the same time, it is likely that biologists may have missed observing the burrowing owl because they were looking down. Tortoise surveys do not require the biologist to look upward towards flushing owls, listen for calls or use binoculars.

Response
See Response to Comment 086. It is common for desert tortoise and burrowing owl surveys to be conducted together. Both surveys require detecting borrows and evaluating burrows for occupancy by owls or tortoise. Looking for burrows does not preclude a surveyor from “looking up” or listening for call.

Comment Number 090
Comment
It is important that the BLM specifically determine whether the Western burrowing owl is present on the site in order to mitigate potentially significant impacts. The BLM must assume that the Western burrowing owl is present on the site, or require the Applicant to redo the survey using proper methods.

Response
See Response to Comment 086.

Comment Number 091
Comment
The BLM must evaluate the Project's impacts to the Golden eagle
The Golden eagle is protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Act. The DEIS recognizes that Golden eagles are common in the Mojave Desert. However, because no Golden eagles were identified during the avian point-count survey, the DEIS does not contain an impact analysis or mitigation measures.

Response
Golden eagle surveys, developed in consultation with USFWS, have been conducted for the Lucerne Valley Solar Project and are included as Appendix M of the Final EIS. The Final EIS has been revised to include the survey findings and impact analysis. Potential effects on Golden Eagle has been analyzed in the section: *Effects BIO-9: Effects on bird species protected by the Migratory Bird Treaty Act, the Bald and Golden Eagle Act, and California Fish and Game.*

Comment Number 092
Comment
The USFWS is currently developing protocol for Golden eagle surveys. Because nesting sites are within ten miles of the Project site and typical prey species occur on the Project site, Mr. Cornett expects that the Project site lies within the hunting territory of the Golden eagle. The BLM should consult with the USFWS and conduct a focused survey for this species.

Response
See Response to Comment 091.

Comment Number 093
Comment
The BLM must evaluate the Project's impacts to rare plants
The DEIS does not provide a full and fair discussion of impacts to rare plants because none of the twelve special-status plants were found during the deficient onsite survey. According to Mr. Cornett, the surveys were conducted only two days apart in a year when precipitation was far below average.[120] The BLM must require the Applicant to conduct an adequate plant survey so that impacts to rare plants are identified and mitigated.

Response
Impacts on rare plants are addressed in Section 4.6.4.2 of the DEIS. No federal or state-listed as threatened or endangered or otherwise sensitive species were observed on site, so no impacts were identified. After conducting the reconnaissance survey and determining that suitable habitats were present on-site, 12 of the 31 special status species were considered to have a potential to occur there. Protocol-level plant surveys were in accordance with the Botanical Survey Guidelines of the California Native Plant Society. Protocols were developed in consultation with the BLM, and the BLM approved the protocols that were implemented. The survey was completed in May 2009, when these species were in bloom and would be both evident and identifiable at the time of the survey. The protocol level focused plant survey for the 12 species was negative. No federal or state-listed as threatened or endangered or otherwise sensitive species were observed on-site. Many of the special status plant species with a potential to occur on-site require specific soil types that are not characteristic of the project site.

Comment Number 094
Comment
The BLM must evaluate the Project's impacts to mesquite plants. The DEIS does not include any discussion about the Project's impacts to mesquite plants. Using large amounts of well water may cause overdraft conditions, which may impact mesquite plants.[121] Mesquite plants are vitally important to the region as a source of food and shelter to wildlife.[122] Thus, direct impacts to mesquite plants may indirectly

impact wildlife and sensitive species. The BLM must take a hard look at impacts to mesquite plants in order to adequately assess indirect impacts to biological resources.

Response
Mesquite was included in the rare plant surveys. Overdraft conditions are not a part of this project. See Response to Comment 093.

Comment Number 095
Comment
The Project must evaluate impacts to creosote rings

The DEIS does not include any discussion about the Project's impacts to creosote rings.

The Plant Protection and Management Ordinance in the San Bernardino County Development Code regulates the removal of plants.[124] The Code states that creosote scrubs may not be removed from a project site if they form a ring ten feet or greater in diameter.[125] The DEIS states that the Project site is comprised of creosote scrub vegetation that may be impacted by mowing and grubbing activities.[126] Impacting creosote scrubs that form a ring ten feet or greater in diameter would conflict with the County Development Code.

The BLM must take a hard look at whether the Project will impact creosote rings and, thereby, conflict with the Development Code.

Response
While the San Bernardino County Plant Protection and Management Ordinance (Chapter 88.01 of the San Bernardino County Development Code) requires the protection of creosote rings, Section 88.01.030 (b) specifically notes that the provisions of Chapter 88.01 shall not apply to removal from lands owned by the United States, the State of California, or local governmental entity, excluding special districts (i.e., special districts shall be subject to the provisions). Therefore, the project site is not subject to San Bernardino County's Plan Protection and Management Ordinance.

The federal, state, and local permits and approvals that would be required before construction and operation of any of the action alternatives addressed in the DEIS are presented in Table 1-2 of the DEIS, page 1-13. Creosote rings are not discussed in the FEIS.

Comment Number 096
Comment
The BLM must evaluate the impacts of herbicide use.

The DEIS recognizes that the Project would directly affect native vegetation by allowing the increase of invasive weeds, such as Sahara mustard, to spread in the disturbed areas. The Weed Control Plan submitted by the Applicant and the DEIS both note that herbicides would be used to control the weeds.

Response
Impacts associated with herbicide use on BLM land have already been addressed in a previous EIS. The BLM has prepared a Programmatic Environmental Impact Statement (PEIS) for 17 western states that describes vegetation treatment use and herbicides for weed control. The selected alternative for the PEIS identifies the active herbicidal ingredients approved for use on BLM land. Appendix B of the PEIS, Herbicide Treatment Standard Operating Procedures, specifies management of weeds and application of pesticides on BLM land. Table B-1, Prevention Measures, specifies avoidance measures to limit weed infestation, and Table B-2, Standard Operating Procedures for Applying Herbicides, provides details on herbicide application. The procedures listed in this appendix and tables are incorporated as requirements of the Weed Control Plan for the Lucerne Valley Solar Project. The Weed Management Plan and Weed Management Mitigation Measure also disclose the acceptable herbicides to use on the project site.

Comment Number 097
Comment
The BLM must not approve use of these herbicides until specific studies have been conducted indicating that they are harmless. According to Mr. Cornett, herbicides that may be approved can still cause a cancer outbreak in humans and/or serious mutations in wildlife. The BLM must identify which herbicides will be used and disclose any studies that prove the herbicides are harmless, or take a hard look at the Project's impacts to human health and biological resources.

Response
See Response to Comment 096.

Comment Number 098
Comment
The BLM must evaluate the tortoise-proof fence's impacts to species' foraging patterns
The DEIS recognizes that construction of the exterior fence could increase the presence of natural predators and adversely affect desert tortoise breeding migrations. However, the DEIS fails to recognize the fence's significant impacts to desert tortoise foraging. In a desert environment, where resources are in short supply, forcing desert tortoises to travel farther to locate food may cause significant stress on the species and mortality.

Response
Impacts on desert tortoise associated with loss of habitat from clearing and fencing the site are addressed in the DEIS as Effect BIO-8: Loss of desert tortoise or loss of habitat for desert tortoise.

Comment Number 099
Comment
In conclusion, the BLM clearly did not consider every reasonably foreseeable significant impact of the Project. The BLM's failure to take a hard look at biological resources precludes a meaningful analysis by the public and violates NEPA. A revised supplemental DEIS/EIR must be prepared and recirculated by the BLM prior to Project approval.

Response
See Response to Comment 024.

Comment Number 100
Comment
The BLM did not consider all of the Project's impacts to water resources. T'Shaka Toure, an expert hydrologist, reviewed the DEIS with respect to significant impacts on water resources. Mr. Toure determined that the BLM failed to take a hard look at all of the Project's impacts. The BLM must revise its analysis of the Project's impacts to water resources.

Response
The analysis of impacts to water resources was revised in Section 4,5 of the FEIS.

Comment Number 101
Comment
The BLM did not discuss impacts associated with an increased operational water use.

As discussed above, it is likely that the BLM underestimated the amount of water the Applicant would need to clean the solar panels. The DEIS, therefore, contains no discussion of what impact using at least 270,000 gallons of water per year would have on the environment. The BLM must reassess the impacts associated with increased operational water use.

Response
Section 2.2.3.5, Operations and Maintenance, states the following on page 2-22:

"Water for panel washing would be provided through a contract with one of the local large industrial companies or municipal water companies that have high capacity wells and water systems. No new water sources would need to be developed."

Water for panel washing would be trucked to the site, and no additional federal, state, or local approvals would be required. No additional environmental effects, other than those identified in the DEIS, would occur. The impacts of trucking water to the site are addressed in Section 4.13.2.3 of the DEIS. No public health effects from panel washing were identified.

Comment Number 102

Comment

The first impact the BLM must reassess is whether the Project will cause an irreversible and irretrievable commitment of water resources. While the DEIS concludes that the Project will not cause an irreversible and irretrievable commitment of water resources to the point where they would not be available for other users, that conclusion was based on an arbitrarily low and unsupported water use estimate. A more reliable estimate is that the Project will use at least six times more water than what was disclosed in the DEIS. Therefore, it is likely that the Project may contribute to a significant overdraft of the aquifer and cause an irreversible and irretrievable commitment of water resources. The BLM must take a hard look at this significant impact.

Response

See Response to Comment 100. Additionally, the water resources would be approximately 45,240 gallons per year.

Comment Number 103

Comment

The second impact that the BLM must reassess is whether the large amount of operational water will cause artificial flood events to occur on the Project site. It is unclear whether this water will permeate into the soil and whether onsite drainages have the capacity to convey large amounts of water offsite. Runoff water may create ephemeral ponding locations and/or flooding events. The BLM did not evaluate measures for containing large amounts of sheet flow and runoff water from this activity in the DEIS.

Response

DEIS Sections 4.5.2.3 through 4.5.2.5 analyze flooding potential, runoff, and drainage. The DEIS concludes that because the primary drainage channels within the site would be left intact and sheet flow would still occur through the remainder of the site, this type of flow pattern alteration would not alter overall flow pattern for the area or cause floods.

Comment Number 104

Comment

To mitigate impacts associated with runoff water, the BLM should require the Applicant to plant native emergent vegetation in locations where the flows will exit the Project site. Native plants around the drainage outlet locations would provide beneficial cover and refugia for wildlife species. The BLM should also require the Applicant to implement bioswales and/or catchment basins. Bioswales and catchment basins could remove silt and pollution from surface runoff water, as well as provide another source of refugia, cover and food for wildlife.

Response

The Hydrology Study for the Lucerne Solar Project (January 2010), prepared by Westwood Professional Service, Inc., has been submitted to BLM and is included in Appendix O of the Final EIS. Specific requirements such as those proposed by the commenter would be addressed in a streambed alteration agreement under the jurisdiction if the California Department of Fish and Game.

Comment Number 105
Comment
The BLM must take a hard look at the Project's impacts to water users, the groundwater aquifer and flooding that result from using at least 270,000 gallons of water per year to clean the solar arrays.

Response
See Response to Comments 100 and 102.

Comment Number 106
Comment
The BLM did not consider compliance with Section 1602 of the California Fish & Game Code. The Project requires a streambed alteration agreement from the CDFG under Section 1602 of the Fish & Game Code. However, the BLM has completely ignored this and any other State requirement.

Response
The need to comply with the State of California Lake and Streambed Alteration Program is described in numerous sections throughout the DEIS.

Section 1.4.2 describes the Proposed Action's relationship to the Lake and Streambed Alternation program, along with various other state and local plans, policies, and programs. In addition, Table 1-2, lists the major permits, approvals, and consultations that would be required before any of the action alternatives could proceed, including the stream alteration agreement. The need for a stream alteration agreement is also compared across alternatives in Table 2-8. Lastly, Chapter 3 of DEIS includes a discussion of applicable plans, policies, and regulations for each resource area evaluated. These discussions are divided into federal, state, and local regulations, each with individual headings, to facilitate the reader's understanding that the BLM considered all levels of regulations that apply to the Proposed Action.

Comment Number 107
Comment
The CDFG must issue a streambed alteration agreement before this Project can proceed. The proposed Project site contains several streams under the jurisdiction of the CDFG. Construction of the Project will alter the natural flow patterns of these streams where concrete pads and structures are installed, and within the solar array field. Thus, development of the proposed Project will temporarily and permanently impact these streams. The CDFG must issue a streambed alteration agreement before the Project Applicant impacts these drainage systems.

Response
See Response to Comment 106.

Comment Number 108
Comment
Because a streambed alteration agreement is required from the CDFG before modifications to the drainages can occur, the BLM must ensure that the Applicant complies with Section 1602 of the Fish & Game Code before approving the Project. Failure to receive the necessary permits could jeopardize downstream drainages and wildlife, as well as violate California law. The BLM must revise the EIS to reflect and disclose compliance with the Fish & Game Code.

Response
See Response to Comment 106.

Comment Number 109
Comment
The BLM did not consider compliance with the California Porter Cologne Water Quality Control Act

The Project Applicant must comply with waste discharge requirements ("WDRs") of the Regional Water Quality Control Board ("RWQCB"), pursuant to the California Porter Cologne Water Quality Control Act. However, the BLM has completely ignored this and any other State requirement.

Response
Section 3.5.1.2 of the DEIS, describes the state-level plans, policies, and regulations that apply to the project, including the Porter Cologne Water Quality Control Act.

Comment Number 110
Comment
The DEIS clearly states that the Project will discharge storm water into State waters. The Project may also discharge at least 270,000 gallons of non-storm water runoff when the solar panels are cleaned. Because the Project will discharge storm water and non-storm water into State waters, either the Colorado River Basin RWQCB or the Lahontan RWQCB must prescribe WDRs.

Response
Table 1-2 in Chapter 1 describes the permits for all action alternatives the Applicant would be required to obtain including RWQCB. Also see Comment Response 109.

Comment Number 111
Comment
The BLM must identify that the Applicant has not applied for WDRs and no WDRs have been certified for the Project. Approval of the Project by the BLM may, therefore, promote a violation of California law by allowing the Applicant to proceed without all of the necessary permits and approvals. The BLM must evaluate the potential conflict with State law.

Response
See Response to Comment 110.

Comment Number 112
Comment
The BLM must ensure compliance with other federal and State laws governing jurisdictional waters.

According to Mr. Toure, the jurisdictional delineation does not contain sufficient information to adequately and specifically determine jurisdiction of the waters on and impacted by the Project site. Specifically, the delineation relies on incomplete soil data. Further soils surveys are required to support the findings in the jurisdictional delineation. As disclosed, the jurisdictional delineation is faulty.

Response
As noted in Section 1.5 of the DEIS, federal, state, and local permits and approvals would be required before construction and operation of any action alternative could proceed. The Applicant would be responsible for obtaining all permits and approvals required to implement any authorized activities.

The 1987 Wetland Manual and the 2006 Arid West supplement provide the legally accepted method for identifying and delineating US Army Corps of Engineers jurisdictional wetlands in Southern California. In accordance with the method set forth in the 1987 Wetland Manual and the 2006 Arid West supplement, the wetland delineation used three criteria to determine the presence of a wetland: the vegetation, soils, and hydrology of an area must exhibit at least minimal hydraulic characteristics. Based on this approved method, no jurisdictional wetlands were found within any of the drainage systems on the project site.

Further, BLM guidance requires that the agency ensure consistency with all applicable federal, state, and local laws, policies, programs, and plans to the extent possible.

Comment Number 113
Comment
The BLM did not consider all of the Project's impacts associated with new transmission and communications systems. The DEIS states that new communications systems between the site switchyard and the Cottonwood Substation would be required. While the DEIS concludes that construction of the "[c]ommunications systems would be expected to require only minimal site disturbance to implement," there is no discussion or evidence to support this conclusion. The BLM must provide more information about where utility poles will be placed, whether an offsite corridor must be established, and what impacts would be associated with installing new communications systems.

Response
The DEIS concludes that communication systems would require only minimal site disturbance to implement. A Verizon T-1 fiber-optic line would be installed on existing poles between the site switchyard and the Cottonwood Substation. The use of existing infrastructure and the addition of a single line would result in minimal environmental effects because no new poles are proposed for this option. No new off-site corridor must be established for the communications system.

Comment Number 114
Comment
The BLM must consider all significant impacts associated with the Project's energy transmission.

As it is currently written, the DEIS provides nothing more than a list of upgrades the Project requires to transmit energy to the Cottonwood Substation, and it is unclear whether those upgrades will even be sufficient. The BLM must revise the DEIS to include an evaluation of the Project's transmission needs as well as all impacts associated with conveying energy from the Project site.

Response
The DEIS describes the transmission requirements and interconnection status of the Proposed Action to the SCE power grid in the Executive Summary, and Sections 1.5 (Table 1-1), 2.2.3.1, 2.2.2.3, and 2.2.3.4. SCE identified that the upgrades identified would be sufficient for the Proposed Action. SCE performed a system impact study and identified that the existing 33-kV line can carry the 20 megawatts of the first phase with no line modifications. SCE would have to perform additional system impact studies to determine how much additional capacity is on the 33-kV line, although a typical figure is approximately 5 to 6 megawatts. The Applicant and SCE are negotiating a Small Generator Interconnection Agreement, and once it is executed, the identified interconnection facilities would be further refined in the final engineering design.

Comment Number 115
Comment
The DEIS states that Phase I of the Proposed Action would interconnect to the existing Southern California Edison ("SCE") 33-kV transmission line without an upgrade to the existing line. During Phase I, a 33-kV transmission line segment would be constructed across Foothill Road.[159] Phase II would require "reconductoring" (i.e. replacing the existing wire with heavier wire and reusing the existing cross arms and insulators) of the existing SCE transmission line back to the Cottonwood Substation.[160] It is unclear, however, whether Phase II would require additional upgrades. The DEIS acknowledges actual transmission line capacity would have to be verified by a Transmission Study.[161] The DEIS also states that new "transmission poles" would be installed.

Response
SCE performed a system impact study and identified that the existing 33-kV line can carry the 20 megawatts of the first phase with no line modifications. SCE would have to perform additional system impact studies to determine how much additional capacity is on the 33-kV line, although a typical figure is approximately 5 to 6 MW. This is discussed in Sections 2.2.3.3 and 2.2.3.4. The final engineering for Phase II would not be determined until a formal application and transmission study is completed for

Phase II. At that time, an environmental review would be performed in conjunction with the BLM SF-299 ROW application for SCE upgrades.

Comment Number 116
Comment
The BLM must conduct a Transmission Study and make it available to the public before approving the Project. If the BLM does not identify the transmission line capacity, it cannot know what transmission upgrades the Project will require. Failure to identify and describe all aspects of the Project also impacts the BLM's analysis of environmental consequences. This violates NEPA.

Response
The BLM does not perform transmission studies. SCE performed a system impact study and identified that the existing 33-kV line can carry the 20 megawatts of the first phase with no line modifications. SCE would have to perform additional system impact studies to determine how much additional capacity is on the 33-kV line, although a typical figure is approximately 5 to 6 megawatts. This is discussed in Sections 2.2.3.3 and 2.2.3.4. There are no proposed upgrades to the transmission lines, so there are no direct impacts related to the capacity and transmission. Impacts related to the solar development would be proportional. For example if the full 25 megawatt phase II facility would be built it would use twice the acreage and have twice the impact as a 12.5 megawatt development of Phase II.

Comment Number 117
Comment
In addition, the BLM has not taken a hard look at impacts associated with the transmission upgrades it has already identified as necessary. For example, the DEIS must discuss impacts associated with reconductoring. If machinery is used to replace existing wire with heavier wire, there could be direct and indirect impacts to biological resources, traffic, visual, noise and air quality. The DEIS must also discuss all impacts with installing any new transmission poles offsite.

Response
SCE would have to perform additional system impact studies to determine how much additional capacity is on the 33-kV line, although a typical figure is approximately 5 to 6 megawatts. If additional capacity is required, the 33-kV line would have to be upgraded through reconductoring (i.e., replacing the existing wire with a heavier wire and reusing the existing cross arms and insulators) back to the Cottonwood Substation. This reconductioning is not a part of this EIS and is not considered a part of this project. If additional transmission facilities were required, separate environmental review for those facilities would be conducted. To avoid confusion, all reference to reconductoring has been removed from the FEIS.

Comment Number 118
Comment
Agencies frequently overlook impacts associated with transmitting energy. The BLM must provide more information and discuss all of the impacts associated with connecting to the Cottonwood Substation. The impacts analysis must be supported with a Transmission Study.

Response
The DEIS provides a description of the Gen-Tie Line to Cottonwood Substation and provides a "hard look" environmental analysis of the Proposed Action. Refer to DEIS page 2-15 for a description of the Proposed Action interconnection and transmission component.

Comment Number 119
Comment
The BLM did not consider cumulative significant impacts to transmission

While the DEIS recognizes that complete build out of the Proposed Action would cause a cumulative effect, it concludes that "it is unlikely that the Proposed Action would add sufficient power to electric transmission system to require high voltage transmission lines or new substations." The BLM's logic is faulty, and the agency must reassess its cumulative impact analysis.

Response
This project is a small scale project. The connection is to a 33-kV line. There is no expectation of a transmission line or new substation related to this minimal increase in energy.

Comment Number 120
Comment
First, without a Transmission Study, the BLM cannot conclude that energy from the Proposed Action would not be sufficient enough to require significant transmission upgrades. There is no evidence or basis for that determination.

Response
SCE performed a system impact study and identified that the existing 33-kV line can carry the 20 megawatts of the first phase with no line modifications. SCE would have to perform additional system impact studies to determine how much additional capacity is on the 33-kV line, although a typical figure is approximately 5 to 6 megawatts. Additionally, see Response to Comment 114.

Comment Number 121
Comment
Second, cumulative impacts can result from "individually minor" actions that contribute to a collectively significant impact. Thus, even if the Proposed Action itself would not add sufficient power to require significant transmission upgrades, the Proposed Action's contribution, along with the other energy projects in the region, may be sufficient.

Response
Each individual utility-scale power generation facility in California must apply for interconnection to the California Independent System Operator-managed grid. At that time, any specific transmission grid modifications would be identified and determined on a case-by-case basis. As stated in previous responses, SCE performed a system impact study and identified that the existing 33-kV line can carry the 20 megawatts of the first phase with no line modifications. SCE would have to perform additional system impact studies to determine how much additional capacity is on the 33-kV line.

The cumulative impacts of this and the other reasonably foreseeable power projects in and around Lucerne Valley may require significant transmission upgrades to deliver the power to the SCE service area. However, this project does not require a transmission line upgrade. This is discussed in Section 4.9.3.

Comment Number 122
Comment
The BLM must take a hard look at the Project's cumulative impacts to transmission. The BLM must also provide more information about the transmission needs of the other action alternatives so that a meaningful comparison can be made.

Response
See Response to Comment 114. The transmission requirements for all of the alternatives are the same.

Comment Number 123
Comment
The BLM did not consider all direct and indirect noise impacts to sensitive species and sensitive receptors The DEIS notes that sensitive receptors, such as nearby residences and special management areas, may be impacted by construction and operation noise from the Project. There is no acknowledgement in the DEIS, however, that wildlife may be impacted by construction and operation noise. Sounds that are rare or even minor may have a negative impact on wildlife and sensitive species in the area. The BLM must take a hard look at noise impacts to wildlife and sensitive species.

Response
Noise impacts on sensitive species are addressed in Section 4.6.3.2 of the DEIS, under "Effect BIO-4: Disturb wildlife or result in wildlife mortality. Specifically, the DEIS found that Noise, vibration, and human activity would likely cause most wildlife species to avoid the Proposed Action area until the disturbance conditions have concluded. The presence of humans, construction equipment, and dust would cause wildlife to alter foraging and breeding behavior and could cause wildlife to avoid suitable habitat. To avoid avian disturbance before construction, the Applicant would attempt to clear Proposed Action areas of suitable nesting habitat during the nonbreeding season, from September 1 through January 31. Additionally, there are provisions for mitigation measures which would be utilized if construction is conducted during the breading season. Once the Proposed Action is constructed, transmission poles could also pose a direct collision hazard to birds. Most species are expected to reoccupy adjacent habitats following construction and recovery of the vegetation."

No long-term indirect effects on wildlife due to noise, vibration, or dust are anticipated because construction and maintenance would be temporary, although wildlife would be indirectly affected because of the presence of the PV farm.

Noise-related impacts for Alternative 4 were found to be similar to those identified for Alternative 3. Impacts for Alternative 5 were found to be similar to those identified for Alternative 3 but reduced in comparison, based on the reduced area of disturbance.

Comment Number 124
Comment
The BLM did not consider impacts from hazardous materials
Although the DEIS identified prospecting features in the Project area, the BLM failed to take a hard look at potential health risks associated with previous mining activities on the site.

Response
During the cultural resource inventory, evidence of limestone prospecting was found, specifically excavated trenches or test pits. The debris varied from pit to pit, but much of the debris was not associated with mining and was characterized by the cultural resource specialist as refuse and household debris. Much of the debris included cans and bottles, but a few locations had some construction debris, such as wire and some timber. The cultural resource specialist classified the debris as originating from the 1920s to the 1970s and included motor oil cans and three bottles labeled Clorox and Purex. Depending on whether these containers contained material or not, they could be considered hazardous waste. Hazardous wastes are discussed in Sections 3.14 and 4.14. None of the prospecting locations were eligible for listing on the National Register of Historic Places.

Limestone prospecting usually involves removal of stone, as opposed to chemical processing of materials.

Comment Number 125
Comment
Matt Hageman, an expert in hazardous materials, reviewed the DEIS with respect to hazards associated on the site from remnants of hand-dug mining pits. In his comments, he concludes that unevaluated significant impacts to construction workers and future site workers from mining debris may occur. Those impacts include dermal contact and ingestion of dust with soils that may contain metals at concentrations that are hazardous to human health

Response
The available information is that mining debris is not present at the site. The bulk of the remaining debris includes cans, bottles, and some limited construction debris. Although there were three bottles labeled Clorox or Purex, they appear to have been of household size (32 ounce). In addition, there are cans labeled motor oil. If these contained liquids, they could be hazardous wastes and would have to be disposed of properly. Hazardous wastes are discussed in Sections 3.14 and 4.14.

Previous prospecting at the site was for limestone, which does not necessarily involve the use of many hazardous chemicals, as do other types of mining.

Comment Number 126
Comment
Mr. Hagemann recommends that the BLM conduct a Phase I Environmental Site Assessment to evaluate these potential human health risks. If the Phase I Assessment finds the mining debris to represent potential human health risks, a Phase II Environmental Site Assessment should be conducted to include sampling of the debris.[169] To assess the Project's impacts adequately, the BLM must conduct a Phase I Assessment and include the results in a revised DEIS that is circulated for public review.

Response
To reduce potential exposures to contaminated soils, the Applicant would implement MM HAZ-2 and would characterize any hazardous material/waste discarded on-site, as well as any discolored or odorous soil to be excavated. With implementation of the Applicant's Site Safety Plan, MM HAZ-2, Spill Prevention and Response Plan, the SWPPP, and MM HAZ-1, the Proposed Action would not expose workers to contaminated or hazardous materials at levels in excess of those permitted by federal and California Occupational Safety and Health Administration.

Comment Number 127
Comment
The BLM did not consider all impacts to cultural resources

The DEIS acknowledges that five ethnic groups historically used the Proposed Action area: the Mohave, Kawaiisu, Southern Paiute (Las Vegas and Chemehuevi groups), Vanyume/Serrano and Western Shoshone. The BLM neglected to notify all of the tribes, however, about the Proposed Action. The BLM's failure to consult with all of the tribes that have historic ties to the Project area precludes an analysis of all of the Project's foreseeable impacts

Response
Section 5.2.3 of the DEIS lists the Native American tribes that were given notice of preparation of the EIS, as follows:

- Morongo Band of Mission Indians;
- San Fernando Band of Mission Indians;
- San Manuel Band of Mission Indians;
- Serrano Nation of Indians.

The Chemehuevi Tribe and the Twentynine Palms Band of Mission Indians were also given notice of the EIS, and Section 5.2.3 of the Final EIS has been corrected to add both additional tribes to this list.

Comment Number 128
Comment
The BLM did not notify the Chemehuevi tribe about the Proposed Action. The Chemehuevi tribe considers all of San Bernardino County and parts of Riverside, Kern and Inyo Counties its ancestral, historical homeland.

Response
See Response to Comment 127. BLM did consult with the Chemehuevi tribe.

Comment Number 129
Comment
Because Lucerne Valley is only twenty miles from the Chemehuevi's ancient village and major trade route, it is likely that the Chemehuevi used the Project area and have ties to the land. The BLM must consult with the Chemehuevi, and all tribes that have ties to the land, to determine if there are historical

resources that have not been identified. Failure to do so arbitrarily limits the BLM's hard look at the Project's impacts and conflicts with Section 106 of the National Historic Preservation Act.

Response
BLM did consult with this tribe. See Response to Comment 127.

Comment Number 130
Comment
The DEIS contains an arbitrarily narrow purpose and need statement that impermissibly promotes private objectives. The purpose and need statement sets out one simple goal: "to process a ROW application." This narrowly defined statement implies that BLM stands to gain nothing more than a rubber-stamped document at the end of this process. It is nonsensical to think that the BLM would spend taxpayer money and impact the environment for such an inconsequential result.

Response
See Response to Comment 013.

Comment Number 131
Comment
The statement fits the Applicant's goals and objectives better than the BLM's. According to the DEIS, the Applicant has two goals: (1) promote solar technology, and (2) develop 45 MW of energy on public land to maintain a profit margin. While it is unclear what the BLM would gain from the Project, a ROW application rubber stamped "approved" would clearly help the Applicant meet its goals. Thus, the arbitrarily narrow purpose and need statement promotes the Applicant's objectives instead of the BLM's.

Response
See Response to Comment 130.

Comment Number 132
Comment
The BLM must consider alternate sites
The BLM's failure to consider alternate sites was arbitrary and capricious
The federal agency will violate NEPA if it impermissibly determines that alternate sites do not have to be considered.

The BLM's decision not to consider alternate sites is impermissible because it is based on an arbitrarily narrow purpose and need statement. The BLM may not adopt private interests to draft a narrow purpose and need statement that excludes alternatives that fail to meet specific private objectives. Yet, that was the result of the process here. The BLM must consider reasonable alternatives, even if the Applicant does not like the alternative or is incapable of implementing the Project on an alternative site.[193] Thus, as drafted, the DEIS violates NEPA's basic requirement to consider alternatives.

Response
See Response to Comments 013 and 014.

Comment Number 133
Comment
The Project site is on undisturbed lands that are prone to flooding and may contain valuable mineral resources
The proposed Project site is not ideal for long term energy generation. This particular site lies within mostly undisturbed desert habitat that contains untouched and intact environmental resources. Disturbed areas, such as roads and sediment berms, make up only one percent of the site. The rest of the site is characterized by desert scrub vegetation and desert washes. Special-status species, such as the desert tortoise, were observed on the site. In addition, many prehistoric and historic sites have been recorded between the Proposed Action site and the Victorville area.

Response
As noted in Section 2.3 of the DEIS, during the pre-application screening, the Applicant, in coordination with BLM, considered several factors to identify a project site, including site topography, proximity to transmission lines, avoidance of Areas of Critical Environmental Concern and Desert Wildlife Management Areas, designated off-highway vehicle areas, wilderness study areas, and designated wilderness areas.

The Proposed Action and the action alternatives would not significantly increase the potential for flooding in the watershed or its subbasins as discussed in Section 4.5.2.3 of the FEIS.

Potential impacts on biological resources have been identified, along with mitigation applied. In addition, no cultural resources eligible for inclusion on the NRHP are known to occur in the Proposed Action area, in the proposed locations for temporary access roads, or within a one-mile radius of the site perimeter.

Comment Number 134
Comment
This particular site is also prone to flooding events. According to the National Oceanic and Atmospheric Administration, Lucerne Valley was flooded in 1958, 1960, 1965, 1967, 1969, 1972, 2001, and twice in 2005 just six days apart. It is likely that even more flash flood events occurred, because the study is not comprehensive. In fact, modeling, not included in the DEIS, suggests that flooding of the Project site is possible during episodic rain events. Residents and resource agencies have also noted that this area is subject to intense flooding events, including flash floods.

Response
The DEIS discusses the potential impacts from flooding of the Proposed Action site in Sections 4.3.2.3, 4.5.2.3, and 4.5.3.

Comment Number 135
Comment
Finally, mineral extraction may be a beneficial and valuable use of the site. Gold, copper, silver, lead, sand, gravel, stone and uranium have all been prospected, produced and/or processed within five miles of the Project site. It is likely, given the importance of mining in Lucerne Valley's history and the presence of mineral resources around the Project site, that valuable mineral resources are located on the Project site.

Response
There are no active mining operations or mining claims within the project site. The DEIS concludes that due to the lack of known mineral resources at the site, no effect on mineral or energy resources would occur. See Section 4.17.2.3 of the FEIS.

Comment Number 136
Comment
Because the Project site is on undisturbed land with potentially valuable mineral resources that is also subject to intense and frequent flooding, it is not ideal for long-term energy generation. The BLM must consider other sites that will reduce the Project's impacts and support energy generation.

Response
Refer to Section 2.3.1, which describes alternative site locations considered by CES and the BLM. The technical and business criteria included whether the sites were close to existing high-voltage transmission lines that would allow access to the market and whether the sites were subject to significant environmental concerns, such as critical habitat, or contained sensitive resources.

Comment Number 137
Comment
An alternate site on disturbed land not subject to frequent flooding would reduce the Project's environmental impacts and be more conducive to long-term energy generation
The BLM should consider an alternate site on disturbed land. In the desert to the north of the Project site, as well as in Kings and Fresno Counties, there is an extensive amount of abandoned farmland that would facilitate long-term energy generation while reducing the Project's impacts on environmental resources.[204] Both areas have existing infrastructure and are near roads and existing power lines.[205] Because both areas have successfully been used for long-term agriculture use, it is also unlikely that the frequency of flash floods would impact long-term energy generation. The BLM must evaluate siting the Proposed Action on these alternate sites, or risk failing to evaluate a viable alternative.

Response
See Response to Comment 014.

Comment Number 138
Comment
The BLM must consider an alternative site design with four sides
The Proposed Action has twelve sides and a very high boundary-to-area ratio. The design of Alternatives 4 and 5 are not specified, but the DEIS implies that the design of the alternatives would be irregular as well. The BLM should consider a project design with four sides to reduce the boundary-to-area ratio and minimize impacts to biological resources and drainage systems.

Response
Although the layout of the proposed boundary is 12 sided, it is an overall L-shaped layout, reducing the impacts of the edge effect to essentially a six-sided boundary. This would have similar impacts as a four-sided layout. Under Alternative 5, the boundary layout and acreage is reduced, creating two separate, smaller parcels, one square and the other rectangular. See Chapter two for a full description of the alternatives.

Additionally, due to the small amount of public land near the project site, the size of the project and the available public land with the desirable slope for solar energy development, it is not possible to configure the project into a four sided parcel. Please see Section 2.4 of the FEIS.

Comment Number 139
Comment
The high boundary-to-area ratio increases the Project's impacts to biological resources. Instead of impacting a discreet parcel of land, the Project's impacts are spread out in different directions and on different parcels. The solar arrays nearly surround one parcel and envelop large areas of three other parcels.

A twelve-sided configuration also impacts species movements more than a project with four sides. Because there are twelve sides, there are twelve obstructions to migratory movement; there is no clear migratory path for species to move around the Project. A project with four sides, however, would have a clearer path for species to move around.

Response
See Response to Comment 138.

Comment Number 140
Comment
The BLM should consider approving this alternative instead of the Proposed Action. The Proposed Action will impact desert tortoises significantly, and may also impact the Western burrowing owl and Mohave ground squirrel. Implementation of this alternative, however, may significantly reduce the Project's impacts to sensitive biological resources.

Response
Your interest in an alternative with reduced boundaries is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 141
Comment
The BLM must consider an alternative design the reduces impacts to drainage systems

The Project will impact the natural drainage systems that run through the Project site, which will in turn impact water quality and biological resources, as well as increase the potential for flooding on the Project site. The BLM should consider a site design that avoids, or significantly minimizes, these impacts.

Response
Impacts on these dry swales would be mitigated through the 1602 streambed alteration agreement. See chapter 4.5 of the FEIS.

Comment Number 142
Comment
Mr. Toure provided diagrams of two alternative site designs. Both site designs completely avoided or significantly reduced impacts to the blue-line drainages that run through the Project site. These alternative site designs would also allow water from Project activities to be captured in bioswales and discharged into dry washes. The BLM should consider this alternative to reduce the significant impacts to water resources caused by the Proposed Action.

Response
See Response to Comment 141.

Comment Number 143
Comment
The Project will require approval of a streambed alteration agreement from the CDFG and WDRs by the RWQCB. Thus, the Applicant will require approval under CEQA before it can proceed with Project construction. The BLM must work with the CDFG and RWQCB to facilitate this process. It is essential for the BLM to encourage preparation of a joint EIS/EIR at the earliest possible stage to avoid duplication of materials and resources and unnecessary delay.

Response
See Response to Comment 030.

Comment Number 144
Comment
The DEIS does not comply with CEQA. First, California courts have repeatedly held that "an accurate, stable and finite project description is the sine qua non of an informative and legally sufficient [CEQA document]." [216] Compliance with CEQA, therefore, requires that the environmental document provide an accurate, consistent and complete description of the Project. As discussed above, the DEIS fails to do so.

Response
As described in Section 1.2 of the DEIS, the EIS has been prepared following regulations promulgated by the Council on Environmental Quality for implementing the procedural provisions of NEPA (40 CFR, 1500-1508), the Department of the Interior's NEPA regulations (43 CFR Part 46), the BLM NEPA Handbook (H-1790-1), Sections 201, 202, and 206 of FLPMA (43 CFR 1600), and the BLM Land Use Planning Handbook (H-1601-1).

This EIS is not intended to comply with CEQA.

Comment Number 145
Comment
Second, CEQA imposes an affirmative obligation on agencies to avoid or reduce environmental harm by adopting feasible project alternatives or mitigation measures. The DEIS does not propose sufficient mitigation measures, however, to reduce or avoid the Projects impacts. For example, the DEIS states that tortoise-proof fencing and transmission poles installed for the Project could "cause increased predation of reptiles, small mammals, and small birds around the Proposed Action site because raptors would use the infrastructure for perches." Predatory ravens are a leading cause of mortality for the desert tortoise. The DEIS does not disclose, however, how perching will be discouraged on the tortoise-proof fence and the transmission poles. Thus, it is unclear whether the Project's impacts will be sufficiently mitigated.

Response
See Response to Comment 144. Mitigation measures MM BIO-7: Avian Protection and MM BIO-10: Desert Tortoise Proof Exclusion Fence both include features to deter bird perching. Additional details regarding these features have been added to the Final EIS. Additionally, MM BIO-12 addresses requirements related to raven management.

Comment Number 146
Comment
Because the CDFG and the RWQCB must issue permits before the Applicant can begin any development on the Project site, the BLM must abide by the requirements of NEPA and work with the State agencies to develop a joint EIS/EIR. This will avoid duplication of government materials and resources.

Response
The BLM's consultations with state agencies is described in Section 5.0 of the DEIS. In addition, all state agencies with permitting authorities were provided copies of the Notice of Intent to prepare the EIS. In addition, through the California State Clearinghouse, state agencies were provided copies of the DEIS. Copies of the Final EIS/California Desert Conservation Area Plan Amendment will be sent to the California State Clearinghouse to conduct the Governor's Consistency Review, as required by 43 CFR 1610.3-2(e).

Table 1-2 of the DEIS identifies the major permits, consultation, and approvals that would be required before construction and operation of any action alternative could proceed. The Applicant is responsible for obtaining all permits and approvals required to implement any authorized activities. State and local agencies were asked to become the CEQA lead, no agency accepted the role.

Comment Number 147
Comment
The foregoing comments, together with those of the experts, establish that the DEIS simply cannot pass muster under NEPA. The only option is for the BLM to prepare a revised EIS/EIR that is recirculated for public review and comment. We respectfully urge the BLM to do so prior to taking any action on the Applicant's pending federal permit applications to ensure that the basic requirements of NEPA are met.

Response
The BLM, as lead agency, has determined that the DEIS and the revisions made in the Final EIS do not require recirculation of the environmental document.

Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 148
Comment
LVEDA provides an "open forum" dealing with major projects and issues affecting/benefiting Lucerne Valley – therefore is not taking a direct "pro or con" position on this project. However we are in general opposition to utility-scale solar projects – especially on public land – preferring the use of

predisturbed/fallowed private land – but as a first priority – solar panels on rooftops/parking lots/etc. throughout s. Calif. (which the DEIS failed to analyze as a viable alternative to the further commitment of public land resources to subsidize urban areas).

Response
Section 2.4 of the DEIS discusses a Residential Rooftop Solar Panels alternative; however, this alternative was eliminated from further consideration as explained in Section 2.3.1 of the FEIS. The BLM's purpose and need is to process a ROW application and does not have a need to locate alternative methods of energy development. The BLM recognizes that rooftop solar panels could produce renewable energy and supports that type of energy development, but for this EIS, the BLM's purpose and need is to process a specific application. Should the BLM decide to deny the ROW, the Applicant can pursue any other energy development methods, technology, and locations that the Applicant desires, including using rooftop solar panels for energy development.

Alternative sites, on non-BLM lands were considered in the DEIS but were eliminated from further consideration for the reasons detailed in Section 2.3.1 of the DEIS. They were beyond the scope of this FEIS.

Comment Number 149
Comment
We question the intent of a large corporation or its affiliates going through all the time, expense, permitting, paperwork, mitigation, etc. for a (relatively minor) 45 MW project. If it is a "feel good – we're doing something 'green' endeavor" – we prefer that the applicant partner with SCE and spread out its "good will" on rooftops and parking lots – a bigger public relations benefit.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 150
Comment
For whatever reason – to the best of our knowledge - Chevron Energy Solutions reps. have not participated in community meetings – unlike the reps. of every other local solar/wind project currently in the permitting process. Its absence has been noticed.

Response
CES has participated in the NEPA process, which has included participation in some meetings located within the community. CES met with LVEDA in August 2010.

Comment Number 151
Comment
Before the final decision is made, this project should be assessed via BLM's Programmatic process which will identify the limited areas available and suitable for solar plants – along with an understanding of all the land-uses that Lucerne Valley already provide s. Calif. - to fully understand current conflicts and why we need an "Energy Element" in our current BLM and County Plans.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process. However, BLM must process applications in a timely manner as they are submitted. Programmatic EIS are being completed for some types of renewable energy development projects in some areas. However, this application will be fully processed prior to a programmatic solar EIS being completed in California.

Comment Number 152
Comment
The DEIS is well written and understandable, however it devotes a lot of pages to extraneous litigation-avoidance stuff – leaving some real, critical issues unresolved.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 153
Comment
Alt 4 – Modified Site Layout – a viable option - would allow a buffer and on-site location and maintenance of transplanted yuccas/Joshua trees – more reliable than "availability off-site to the public" – which would likely result in 50% mortality at best.

Response
The Applicant is working with San Bernardino County to develop a salvage plan that would ensure the long-term survival of yucca plants, which would be flagged for salvage and removed. In addition, no long-term adverse indirect effects on the remaining yucca plants (e.g., due to noise, vibration, dust) are anticipated because construction and maintenance would be short term.

Comment Number 154
Comment
The "private land" alternative was basically ignored with inadequate rationale. First Solar and Next-Era found large, fallowed parcels in Lucerne Valley – with a lot more existing all the way to Palmdale.

Response
This alternative is outside the scope of this EIS.

Section 2.3.1, Alternative Sites Considered by CES, states that "As part of its initial study, the Applicant used several technical and business criteria to evaluate various potential sites for a solar project. These included whether the sites were located close to existing high voltage transmission lines that would allow access to the market. Because of this project's proposed generating capacity, the cost of building long interconnection lines would make it economically infeasible to construct.

"The Applicant determined that if it pursued the private land option, it would need to enter into several agreements with landowners to assemble a large enough tract to build its facility. This would have required the Applicant to enter into long-term leases without assurance that the necessary permits and approvals would be issued, which it did not believe was economically feasible. Therefore, private lands were eliminated from further consideration."

Comment Number 155
Comment
Rated generating capacity vs. actual production is a major issue with desert solar projects. The net benefit is likely marginal. Energy/CO2 emissions/etc. required for making panels, structures, construction, etc. – plus the consumption of 516 acres of public land (@11 ½ acres/MW) – plus the additional loss of "multiple use" on the mitigation/compensation land ----compared to other energy sources – need to be assessed from a more global perspective.

Response
The rated generating capacity and the actual production are noted as distinct amounts. The purpose of the NEPA process is to weight the varying benefits and losses for proposed projects. Please see Chapter 4 of the FEIS for more information.

Comment Number 156

Comment
De-brushing/grading will create a long-term dust source, adversely affecting the facility and down-wind receptors. Minimal grading, vegetation mowing and placement of decomposed granite or small gravel will help to stabilize the site and reduce weed infestations – as well as enhancing native re-vegetation if and when facilities are removed. The proposed "mowing" is certainly worth pursuing. However, the perennially-shaded ground will become devoid of vegetation and root structure – and the partially shaded area will likely generate more weeds than natives – thus a hindrance to operations and the need for regular weed abatement. (Note: Mojave rattlesnakes will love the shade on the project's periphery). The "Weed Control Plan" seems to have realistic and effective measures. (The Mojave Desert Resource Conservation District and its affiliated Mohave Weed Management Area group can offer advice if requested).

Response
See Response to Comment 069.

Comment Number 157
Comment
Construction water might be obtainable from the Mojave Water Agency's "Morongo Pipeline" – generally following Foothill Rd. immediately north of the project site – the use of untreated state water vs. good quality groundwater. Contact: MWA (760 946 7000) for info. and location of connections.

Response

CES is aware of this source of water and may consider it as a resource.

Comment Number 158
Comment
The long-term effectiveness of tortoise relocations to adjacent areas did not seem adequately addressed.

Response
The BLM anticipates that only a few individuals would be relocated to areas immediately outside the construction ROW. All removal and handling would be in accordance with Guidelines for Handling Desert Tortoises During Construction Projects (Desert Tortoise Council 1999). In addition, in accordance with mitigation measure MM BIO 3, biological monitors (authorized biologists, approved by the BLM, USFWS, and CDFG) would be on-site during all ground-disturbing activities. This is fully discussed in the Biological Opinion.

Comment Number 159
Comment
3.11-3: The statement: "Hunting is not an allowable use on the Proposed Action site" is very likely incorrect. It certainly won't be when construction starts – but currently – the only regulation we know of is "shotgun only".

Response
Based on the CDCA Plan, the project site is entirely on land in the Multiple Use Class (MUC) M (Moderate Use) Category, which is defined as follows:

"These lands are managed in a controlled balance between higher-intensity use and protection. A wide variety of uses, such as mining, livestock grazing, recreation, energy, and utility development are allowed."

Although hunting and recreational shooting are allowed on land classified as MUC M, the project site is within a zone that has been established where shotgun use only (with shot no larger than half the bore diameter) is allowed. The general area is just south of State Route 58 and Interstate 40, north of the San Bernardino National Forest, west of the Twentynine Palms Marine Corps Air/Ground Combat Center, and east of the Los Angeles County line. It is designated as shotgun only by San Bernardino County Ordinance due to the presence of scattered residences and recreationists in the area. The Final EIS will be revised to reflect this.

Comment Number 160
Comment
To fully assess the consequence of the project's effect on biological resources – the DEIS needs a description of the most likely location for the 1:1 ratio mitigation/compensation – the location and ultimate loss of "multiple uses" on said parcel that might be purchased – or to what resource any "in-lieu" fee might be directed. Off-site mitigation/compensation requirements ARE a direct result of this project and need to be fully explained.

Response
The USFWS released a Biological Opinion, the results of which have been incorporated into the EIS. It notes that the Applicant will compensate for loss of desert tortoise habitat in accordance with the new renewable energy mitigation policy adopted by the USFWS, the BLM, and CDFG but does not have specific information regarding future enhancement projects or acquisition. MM BIO-13 outlines the types of habitat enhancements being proposed and defines the general location of acquisition land. A separate NEPA document will be developed to address the potential restoration activities. Mitigation replacement land would be a requirement of California Department if Fish and Game.

Comment Number 161
Comment
Assuming the applicant fully intends to develop both phases, approval of Phase 1 alone is premature w/o knowing the transmission requirements of both phases together (upgrading existing line or a new one). Needs discussion!

Response
As noted in Section 2.2.31. of the DEIS, SEC has not identified specific improvements to the distribution (transmission) lines and none are authorized under this document.

Comment Number 162
Comment
New transmission lines or upgrades should include "raven proof" devices to the extent feasible – ravens being the biggest threat to juvenile tortoises.

Response
MM BIO-23, Raven Management Plan, has been added to address the issue of ravens. Additionally, the Applicant will provide funding to a regional Raven Management program that will address raven impacts on a regional basis.

Comment Number 163
Comment
The "heat sink" and albedo "change" effects need to be assessed, especially for the larger projects and those close to residential uses.

Response
The project is not close to a residential area.

Comment Number 164
Comment
Project decommissioning and recycling of facilities were described – however specific measures for reclamation were sketchy. Bonding or some other means to assure ultimate clean-up and reclamation in case of project abandonment need to be included in the permit.

Response
A project decommissioning plan is being prepared. Bonding is required and will be completed prior to the issuance of the Notice to Proceed, if a development project is selected.

Comment Number 165
Comment
The "level of service" (LOS) assessments for regional highways/roads don't adequately quantify the actual "on the road" impacts – especially on Hwy 18 through Lucerne Valley's commercial area and 4 way stop. CHP escorting will likely be necessary. The proposed "off-peak" construction travel may not fully suffice in and by itself.

Response
Construction of both phases of the project would result in short-term increases in traffic volume of a maximum of 90 trips per day (45 morning and 45 evening trips) due to the construction labor force (assuming they all drive separately) and approximately 20 trips (10 inbound, 10 outbound) for delivering construction equipment and supplies to the site. DEIS Implementing mitigation measure MM TRAN-1: Implement Traffic BMPs During Construction, which includes scheduling truck traffic for off-peak hours to reduce effects during periods of peak traffic, would reduce the temporary impacts on Highway 247. Installing a right-turn lane on SR 247 was not identified. However, CES, in conjunction with CAL TRANS, may consider developing a temporary right turn lane for use during construction. This analysis meets industry standards.

Comment Number 166
Comment
Unless we missed it – there was no mention of a right-turn lane onto Santa Fe Fire Rd. Quote from our scoping letter: "A right-turn lane on Hwy 247 would provide safer egress in this area of high-speed traffic – especially for the construction phase".

Response
Construction of both phases of the project would result in short-term increases in traffic volume of a maximum of 90 trips per day (45 morning and 45 evening trips) due to the construction labor force (assuming they all drive separately) and approximately 20 trips (10 inbound, 10 outbound) for delivering construction equipment and supplies to the site. DEIS Implementing mitigation measure MM TRAN-1: Implement Traffic BMPs During Construction, which includes scheduling truck traffic for off-peak hours to reduce effects during periods of peak traffic, would reduce the temporary impacts to Highway 247. Installing a right-turn lane on SR 247 was not identified. Industry standards did not require a turn lane, however, CES, in conjunction with CAL TRANS, may consider developing a temporary right turn lane for use during construction.

Comment Number 167
Comment
The analysis re: the project's future effect on BLM's CDCA Plan's "Contingent Corridor S" is probably correct – but this "corridor" needs to be removed from the Plan in order to preclude another "Green Path North" attempt.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 168
Comment
4.6-5: Question: The project description seems to indicate that the panels would be "fixed" in place – thus w/o tracking ability. If so – is this statement correct?: "During precipitation events, solar panels would be placed in the flat horizontal position".

Response
The description of solar panels will be revised in the Final EIS to note that both fixed tilt and single axis tracker systems are possible, but a final decision has not been made.

Comment Number 169
Comment
Table 1-1: The statement: "The site chosen is within a 'development corridor'….." is NOT consistent with the LV Community Plan's locations for "industrial" development and thus misleading. The entire table includes very weak rationale.

Response
Table 1-1 incorrectly noted that the project site is in a "development corridor." It has been corrected to "site is chosen within a designated BLM Utility Corridor."

Comment Number 170
Comment
The Big Bear hospital is cited as close and available in case of injury, emergency, etc. It might be, but the responding County Fire paramedics – and likely the back-up ambulance service from Victor Valley – normally transport patients to Apple Valley or Victorville hospitals – not Big Bear.

Response
This has been corrected in the Final EIS.

Comment Number 171
Comment
Figure 3.18-1: The Cumulative Projects Map shows a "Cumulative Effects Study Area" (CESA) boundary within a 6 mile "buffer" radius from the project site. However it shows other proposed project locations outside said "buffer". A complete and adequate cumulative impact analysis needs to show and assess all the proposed projects within the larger Lucerne Valley area that is affected. Some of the renewable projects listed may no longer be considered. The ones not shown – all with applications currently being processed by the County and/or BLM – are 2 "First Solar" PV's west on Hwy 18 and another adjacent to Barstow Rd. – Granite Wind west of Barstow Rd. (with DEIR/EIS issued) – Next-Era's PV in n. Lucerne Valley – plus the proposed 29 Palms Marine Base expansion into a major portion of Lucerne/Johnson Valleys northeast of the Chevron site. All these projects will have significant cumulative effects on our community.

Response
See Response to Comments 020 and 023.

Comment Number 172
Comment
3.15-6: The statement re: LVEDA is correct and appreciated.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 173
Comment
4.15-3: The statement: With the project, "the social well-being of LVEDA (and its reps.) would be enhanced because compatible sustainable infrastructure development would be implemented within the Lucerne Valley" is a bit esoteric and certainly not fully consistent with our mission. Some of the residents close to the project site remain opposed and thus seem to be "adversely affected" by the project.

Response
The analysis is based on the economic development and financial stimulus to the area from the project area rather than a consensus of the project's desirability to all members.

Comment Number 174
Comment
Need more emphasis on "local hiring". Talent and equipment are locally available for a substantial portion of the construction and maintenance work required. It certainly will not look good to import a lot of outside workers – union or not – when a local workforce is available. Would be just another imposition on our community. Cement/concrete/aggregate are locally available and we certainly expect that they be utilized if the project is built.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 175
Comment
The project's effect on surrounding private land values is summarily dismissed. At the very least, it could hinder area sales. Empirical data is insufficient to determine "no substantial effect".

Response
Impacts on property values are discussed in Section 4-15 of the DEIS.

Comment Number 176
Comment
These projects aren't necessarily "beneficial" to local communities. We need ways to make them more "friendly and welcomed". Chevron could be the lead in devising a method to "arrange" the purchase of materials in San Bernardino County – with sales tax benefiting the county – and ideally – the ½ cent Measure I (road tax) portion dedicated to Lucerne Valley roads that get hammered by all the truck traffic associated with these projects.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 177
Comment
We invite the applicant to a LVEDA meeting to better explain the project's tax revenue benefit – specifically the annual taxes from its "leasehold interest". Property taxes are not generated from public lands. How do these projects' tax incentives affect property tax revenue normally based on the assessed values of the facilities? Would the annual "leasehold interest" revenue be deducted from what the county receives from BLM as "payment in lieu of taxes" (PILT)?

Response
CES attended a meeting with LVEDA in August 2010.

Comment Number 178
Comment
We request a meeting with the applicant and BLM prior to finalization of the EIS and a decision on the permit.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process. CES and BLM attended a meeting with LVEDA in August 2010.

Comment Number 179
Comment
Our revised site phasing plan (Figure 2.1) and site layout plans (Figures 2.2a & 2.2b) will be sent out to you on a CD for overnight delivery. The phasing has been revised during detailed engineering to defer construction of the eastern portion of the site until Phase 2. This defers the design and construction costs in the area susceptible to the greatest surface water flows, as well as the potential impacts and mitigation associated with grading and development of this area. Additionally, should the transmission line capacity not be upgraded by SCE, this portion of the site would not be developed, avoiding the potential impacts all together. The revised site layout plans have been revised to reflect both fixed tilt and single axis tracker systems.

Response
The description of all action alternatives has been modified in the Final EIS to incorporate this information.

Comment Number 180
Comment
During detailed engineering, we have concluded that cutting vegetation at four inches above the ground would not be practical for construction. In all likelihood, the vegetation would be removed and 420 acres of the site would be rough graded. The DEIS states that the vegetation on the site would be cut to 4-inches above the ground. Since this area would then be shaded by solar panels after construction is complete, this would essential result in the loss of all vegetation on the developed portion of the site (as acknowledged in Section 4.6.2.2 of the EIS). Consequently, the change to rough grading this area would not result in new or different impacts as compared to what has been evaluated in the EIS.

Response
The description of all action alternatives has been modified in the Final EIS to incorporate this information.

Comment Number 181
Comment
We disagree with the conclusion in the water resources section that states: "Therefore, it is not possible at this time to estimate what the potential flood risk is at the site and the possible effects." The project would maintain existing flow patterns and velocity for surface water run-off from the site, and the potential for flooding would not change as a result of the project. The effects related to flooding would most likely be limited to damage to Project equipment placed in areas where high velocity flooding would occur. A finalized hydrology study will also be included on the CD.

Response
The Hydrology Study for the Lucerne Solar Project (January 2010), prepared by Westwood Professional Service, Inc., has been submitted to BLM and is included in Appendix O of the Final EIS.

Comment Number 182
Comment
Please accept this as a formal request to revise the above referenced document to reflect these changes. Thank you in advance for your review and consideration. Please contact us with any questions or comments.

Response
Your comment is included in the public record and will be taken into account by the Authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 183
Comment
This letter is to clarify the comments made to the above documents in our previous letter dated May 18, 2010. Where it reads "the site would be rough graded", as applicant, we would like to explain the intent embodied in the terms "rough graded": through the grubbing and scarifying process, it is expected that the contours of the site will be modified while the general slope and undulations of the site will be preserved.

Response
The description of all action alternatives has been modified in the Final EIS to incorporate this information.

Comment Number 184
Comment
EPA is concerned about the potential impacts to the ephemeral water segments located within the project area. The DEIS provides basic hydrologic information on the location of washes in the project area, but does not include a detailed map nor analysis of the origin and termini of these ephemeral waters.

Response
A detailed discussion, including modeling, maps, and analysis can be found in the Hydrology Study (Appendix O).

Comment Number 185
Comment
Include a more detailed discussion and map of the water resources and hydrographic basins surrounding the proposed project.

Response
See Response to Comment 184.

Comment Number 186
Comment
Include information on the functions and locations of ephemeral washes in the project area.

Response
See Response to Comment 184.

Comment Number 187
Comment
The DEIS states that the project site is prone to intense flooding events, including flash flooding (p. 3.5-5), however no floodplain studies nor mapping exercises have been conducted to assess flood hazards. In addition, the document states that "No hydrologic modeling has been done at this stage." (p. 2-16). Considering the lack of information regarding site hydrology and flood danger, it is impossible to properly assess the risks that the proposed project poses to local and regional hydrology, water quality, and human health.

Response
See Response for Comment 134, 181, and 184.

Comment Number 188
Comment
Demonstrate that downstream flows will not be disrupted due to proposed site development.

Response
The project grading and construction plan is designed to have minimal impact on natural flow paths that cross the project site. A detailed discussion, including modeling, maps, and analysis can be found in the Hydrology Study (Appendix O).

Comment Number 189
Comment
Include a functional assessment of the waters on the proposed project site and describe the changes to the function of those waters that would result from the proposed project.

Response
There are no surface waters found on the project site except during storm events. The function of groundwater at the site will not be altered by the proposed project. A detailed discussion of the site hydrology, including modeling, maps, and analysis can be found in the Hydrology Study (Appendix O).

Comment Number 190
Comment
The DEIS does not provide information about fencing' (pg. 2-16) nor the effects of fencing on drainage systems. As previously discussed, storms in this region can be sudden and severe, resulting in flash flooding. Fence design must address hydrologic criteria, as well as security performance criteria. The National Park Service recently published an article I on the effects of the international boundary pedestrian fence on drainage systems and infrastructure. We recommend that BLM review this article to ensure that such issues are adequately addressed with this project.

Response
As outlined in the Storm Water Pollution Prevention Plan (Appendix I), fencing across washes on the project site is expected to wash away during severe storm events and be replaced. This will prevent the accumulation of debris, sediment, and additional scour points. Additional analysis of the magnitude and potential for stormflow on this site is provided in the Hydrology Study (Appendix O).

Comment Number 191
Comment
Provide more detailed information about fencing and potential effects of fencing on drainage systems within the FEIS. Ensure that the fencing proposed for this project will meet appropriate hydrologic performance standards.

Response
See Response to Comment 191.

Comment Number 192
Comment
The DEIS includes a Modified Site Layout Alternative (Alternative 4). This alternative would redirect drainage on the site to a vegetated screen designed to screen views of the project for nearby residents and drivers on Santa Fe Fire Road (p. 2-24). This alternative is chosen as the BLM "Preferred Alternative" (p. 2-36). By rerouting drainage, this alternative would alter site hydrology, potentially impacting water quality, groundwater recharge, soil erosion, vegetation, and wildlife. The potential for such consequences is not addressed, however. In addition, insufficient information is provided on specifically how and where drainage would be rerouted.

Response
An overall design intent for this alternative is to minimize impacts. Altering the drainage onsite was anticipated to be minor, and only included altering the drainage around the maintenance building to the

vegetation strip. It was not anticipated as a large scale redirection of drainage water. The current preferred alternative does not include this redirected drainage. Additional analysis of the magnitude and potential for stormflow drainage at this location is provided in the Hydrology Study (Appendix O).

Comment Number 193
Comment
Provide details on where and how drainage would be rerouted across the site under Alternative 4: Modified Site Layout.

Response
The exact pathway and method of redirecting the drainage would have been in the Streambed Alteration Agreement. Since this is no longer a part of the preferred alternative, this agreement would not be fully developed. See Response to Comment 192.

Comment Number 194
Comment
Analyze the potential impacts of Alternative 4 in greater detail, in particular considering impacts to hydrology, water quality, groundwater, soil, vegetation and wildlife.

Response
The amount of redirected drainage was anticipated to be very minor. The analyses are accurate as written.

Comment Number 195
Comment
We are concerned with possible impacts on waters of the U.S. (WUS). We understand the project proponent is re-evaluating whether or not any of the washes flowing through the proposed site may qualify as WUS. We encourage BLM to consult with the Army Corps of Engineers regardless of the outcome of that analysis. A jurisdictional determination of waters of the United States must be completed in order to determine whether waters of the US will be impacted by the proposed project. In addition, we understand from our correspondence with BLM that the washes that flow through the site terminate before reaching any known waters of the US; however, this is not discussed in detail in the document and this information should be provided in the interest of public disclosure.

Response
Lucerne Valley Wash receives all surface flow from the proposed project site. This wash terminates in the closed basin / dry lake bed of Lucerne Lake. The source and fate of water flow at the project site is discussed in the Hydrology Study (Appendix O). Consultation with the Army Corp of Engineers is ongoing.

Comment Number 196
Comment
Consult with the Army Corp of Engineers regarding a jurisdictional determination for the proposed project site, and include the results of that determination in the FEIS.

Response
Consultation with the Army Corp of Engineers is ongoing. A final determination related to jurisdictional water is expected prior to BLM issuing a Record of Decision. A right of way, if issued, would be contingent upon CES obtaining all required permits from other agencies.

Comment Number 197
Comment
According to the DEIS, construction of the proposed Project is expected to result in direct loss of 18 acres of land characterized as desert wash communities (p. 3.6-7). In addition, the proposed Project will degrade the functions of waters throughout the site through the placement of road crossings, fencing, and photovoltaic cell posts. As noted above (see Hydrology and Water Resources, Ephemeral Washes)

natural washes perform a diversity of hydrologic and biogeochemical functions that directly affect the integrity and functional condition of higher order waters downstream, and ephemeral washes support unique plant populations and provide habitat for breeding, shelter, foraging, and movement of wildlife. Desert wash ecosystems are highly sensitive to disruption, and impacts to their natural state may be impossible to remediate.

Response
BLM agrees with this comment.

Comment Number 198
Comment
Avoid and minimize direct and indirect impacts to desert washes to the maximum extent practicable. Impacts to be accounted for and minimized include erosion, migration of channels, and local scour.

Response
Analysis in the Hydrology Study (Appendix O) includes the potential for erosion, channel migration, and scour. The project has avoided and minimized direct and indirect impacts to desert washes. Also see the Storm Water Pollution Prevention Plan (Appendix I).

Comment Number 199
Comment
Minimize the number of road crossings over washes in order to minimize erosion, migration of channels, and scour. Road crossings should be designed to provide adequate flow through during large storm events.

Response
Arizona crossings will be used where roads intersect washes within the proposed project site. The number of these crossings has been minimized to the greatest practical extent.

Comment Number 200
Comment
Commit to the use of natural washes, in their present location and natural form and including adequate natural buffers, for flood control to the maximum extent practicable.

Response
The project grading and construction plan is designed to have minimal impact on natural flow paths that cross the project site. A detailed discussion, including modeling, maps, and analysis can be found in the Hydrology Study (Appendix O).

Comment Number 201
Comment
Demonstrate that downstream flows will not be disrupted due to proposed changes to any natural washes.

Response
The project grading and construction plan is designed to have minimal impact on natural flow paths that cross the project site. A detailed discussion, including modeling, maps, and analysis can be found in the Hydrology Study (Appendix O).

Comment Number 202
Comment
The proposed project and any of the BLM action alternatives would result in direct impacts to vegetation and wildlife, including a number of special status species. EPA recommends that the FEIS and ROD contain specific and binding commitments to the mitigation measures put forth in the Biological Assessment (BA) and DEIS. Furthermore, additional details regarding the mitigation measures to be employed would assist in the assessment of impacts to biological resources. For instance, mitigation

measure MM BIO-12 (p. 4.6-15) would offset impacts to desert tortoises by preserving off-site desert tortoise habitat. Further details regarding the location and nature of this off-site compensatory mitigation should be provided, as available. In addition, we recommend that the BLM consider applying compensatory mitigation at a ratio higher than the 1: 1 ratio put forth in the DEIS. As stated in the DEIS, the impacts to desert tortoise would likely extend beyond the project boundaries due to sensitivity to noise, vibrations, invasive species introduction, and collision with vehicles traveling to and from the site. We therefore recommend that compensatory mitigation be expanded to account for these additional impacts. Lastly, in the interest of full public disclosure, EPA recommends that the FEIS include the most up to date information available regarding the status of consultation with U.S. Fish and Wildlife Service and California Department of Fish and Game.

Response
See Response for Comment 160.

Comment Number 203
Comment
The FEIS and ROD should include specific and binding commitments to mitigation measures put forth in the BA and DEIS.

Response
The mitigation measures in the BA are identified in the FEIS in Section 4.6. These required mitigation measures will be carried forward into the ROD.

Comment Number 204
Comment
Consider the implementation of compensatory mitigation under MM BIO-12 that exceeds the 1: 1 ratio discussed in the DEIS.

Response
See Response for Comment 038.

Comment Number 205
Comment
The FEIS should include the most up to date information available regarding the status of consultation with the US FWS and CDFG.

Response
The FEIS provides a copy of the Biological Opinion in Appendix K, which concludes consultation with the US FWS. Consultation with CDFG is ongoing. If a right of way is issued, it would be contingent on CES completing consultation with CDFG.

Comment Number 206
Comment
The DEIS contains a brief discussion of biological soil crusts or cryptobiotic crusts (p. 3.4-2). The analysis dismisses these crusts as not serving a critical role in dust suppression on the proposed project site, however no further details are provided. EPA recommends that this discussion be expanded to include details regarding the extent of biological soil crusts on the site, the role they play on the site, and any impacts the proposed project may have on these crusts.

Response
Cryptobiotic crusts are expected to cover less than 5% of the proposed project site. Overall site preparation is expected to include removal of vegetation, but little grading. This means that while most of the crusts on site will be disturbed during construction, the organisms and organic material that they are made of will remain present.

Comment Number 207

Comment
Expand the discussion of biological soil crusts to include details regarding their extent on the proposed project site, the role they play on the proposed project site, and possible impact resulting from BLM action alternatives.

Response
See Response for Comment 206.

Comment Number 208
Comment
The DEIS lists 3 solar projects in close proximity to the proposed project, but limits the scope of the cumulative impact analysis to only those projects occurring within 6 miles of the proposed project site. The reasoning for limiting the scope of the cumulative impact analysis to that radius is not provided. Without further information about projects in the region, it is difficult to conduct a thorough cumulative impacts analysis. The FEIS should include a more extensive analysis that defines the parameters of the analysis and the reasons for the establishment of those parameters.

Response
See Response for Comment 020 and 023.

Comment Number 209
Comment
Update the list of reasonably foreseeable projects to include all projects that may have impacts that may cumulatively affect the Lucerne Valley. In particular, the analysis should include discussions of the cumulative impacts on transmission capacity, water resources, and biological resources.

Response
See Response for Comment 023.

Comment Number 210
Comment
Evaluate site conditions at locations with existing ROW applications. Determine and disclose whether the ROW applications are active and viable.

Response
BLM does a general review of the viability of a ROW application prior to beginning the processing of the ROW application. The applications included in the cumulative affects section are all active and considered viable.

Comment Number 211
Comment
The DEIS should describe the reasonably foreseeable future land use and associated impacts that will result from the additional power supply. The document should provide an estimate of the amount of growth, likely location, and the biological and environmental resources at risk.

Response
BLM does not anticipate any future growth from this proposed project. The renewable energy projects are to change the mix of energy generation sources in the energy distribution company's portfolios. California has a requirement for a larger proportion of the energy mix to include renewable energy sources. The renewable energy projects would provide energy that would replace existing energy that is derived from non-renewable sources.

Comment Number 212
Comment
EPA believes the discussion in the DEIS regarding the purpose and need for the CES Project should be expanded. As we indicated in our scoping comments, the purpose of the proposed action is typically the

specific objectives of the activity, while the need for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity.

Response
See Response for Comment 013 and 029.

Comment Number 213
Comment
Building upon the comment above, the Purpose and Need for a project should be stated broadly enough to spur identification of the full range of reasonable range of alternatives, regardless of what the future findings of an alternatives analysis may be. The Purpose and Need should focus on the underlying problems to address (e.g., lack of capacity to serve an increasing demand for energy, or the need to develop sufficient renewable energy to meet State renewable portfolio standards). A solar power plant may be an integral component of the potential solution to the problems identified in a Purpose and Need discussion; however, the Purpose and Need statement should allow for the analysis of a full scope of alternatives, including off-site locations, environmentally preferable on-site alternatives or other modes of renewable energy generation.

Response
The purpose and need, as stated is accurate. The ‘problem to be addressed; for BLM, is to made a decision to grant, grant with modification, or deny a specific right of way application for a specific piece of land.

Comment Number 214
Comment
The DEIS eliminates all off-site and alternative technology alternatives from consideration. In addition, the analysis of potential on-site alternatives was limited to the proposed action, a single reduced project alternative and a single modified site layout alternative. This somewhat narrow range of alternatives is, in part, influenced by the Bureau of Land Management's (BLM) narrowly defined Purpose. According to the DEIS, BLM's purpose for the CES proposed action is "to approve, approve with modifications, or deny issuance of a Right-of-Way (ROW) grant to CES for the proposed solar project." (at p. 1-2). While this may be the immediate federal purpose of the project, we recommend that the FEIS use a combined BLM and Project Proponent Purpose and Need statement as the foundation upon which later sections, such as the alternatives analysis, are based. It would also be helpful to include a discussion of the types of modifications that BLM could require, the circumstances under which BLM is authorized to deny a ROW grant, and the consequences of such a denial. The purpose statement should be broad enough to allow for a reasonable range of alternatives, including environmentally preferable alternatives.

Response
See Response for Comment 014.

Comment Number 215
Comment
The FEIS should reflect a broader purpose and need statement that allows for a full evaluation of other alternatives, including off-site locations and other environmentally preferable on-site alternatives.

Response
See Response for Comment 213.

Comment Number 216
Comment
The FEIS should explain BLM's options for acting upon an application for a right-of way grant. For instance, it would be helpful if BLM would explain the extent of its authority in regards to requiring the adoption of a "modified" project alternative.

Response

BLM can modify the project by changing technology, or requiring mitigation. The right of way application is related to a specific piece of land. BLM can not change the right of way application area. See Response for Comment 213.

Comment Number 217
Comment
While the DEIS indicates that the need for the proposed action has its basis in Federal orders and laws regarding renewable energy generation, the current Purpose and Need section does not fully describe the specific Federal, State, and individual utility power provider renewable energy targets, timelines, and underlying needs to which BLM is responding. EPA believes this context is imperative for decision makers and the public to have, in light of the large number of renewable energy projects moving forward.

Response
See Response for Comment 213. Although a specific project may assist in meeting a target, the purpose and need for BLM to write an EIS is to process a specific application. If an application was not submitted, BLM would not write an EIS.

Comment Number 218
Comment
Presumably, some number of renewable energy facilities will be constructed pursuant to the joint Department of Energy (DOE) BLM Programmatic Solar DEIS effort as well as the Desert Renewable Energy Conservation Plan (DRECP) process. It would be helpful to know the likely locations, construction timing, and generation capacities of such facilities relative to the proposed Project.

Response
Specific projects developed for these programs are not currently identified. (However, the DRECP is involved in many of the existing, on-going project.)

Comment Number 219
Comment
Fully describe the specific Federal and State renewable energy targets, timelines, and underlying needs to which BLM is responding, and explain how the Project meets those needs in the context of the many renewable energy project applications in the Desert Southwest and California.

Response
The need that BLM is responding to is to process a specific application.

Comment Number 220
Comment
To the extent practicable, the FEIS should discuss how many of the total renewable energy applications received by BLM are likely to proceed pursuant to the joint Department of Energy (DOE) BLM Programmatic Solar DEIS effort and the Desert Renewable Energy Conservation Plan (DRECP) process, and the level of energy production those applications represent.

Response
All applications are being processed. A decision regarding issuing a right or way, issuing a modified right of way, or denial of a right of way would be made in the ROD.

Comment Number 221
Comment
Further describe the utility purchases of power and provide a description of how the power would be bought, sold, and used so that the reader can better evaluate the tradeoffs between resource protection and power generation.

Response
The power generated by this project, if approved, would be placed in the Southern California Edison energy portfolio and would replace energy currently created from non-renewable sources.

Comment Number 222
Comment
The FEIS should clearly demonstrate the independent utility of the Project within its current geographic limits as it relates to the need for the Project. If the Project need cannot be met without future planned improvements, such as the reconductoring or further upgrading of the Southern California Edison transmission lines proposed to serve the site, the scope of the Project should be expanded accordingly, since these would be considered connected and similar actions (40 CFR 1508.25). In that case, the NEPA evaluation should include the full extent of the planned Project, including the necessary transmission lines and how it will operate. This broader scope should be applied to the identification and evaluation of project alternatives that may be less environmentally damaging. EPA believes this is the most effective way to address indirect and cumulative environmental impacts. The DEIS indicates that a separate environmental analysis would be conducted if further renovation of the SCE transmission lines were necessary; however, if the Project cannot meet its Purpose and Need without the transmission line project (there by qualifying it as a connected action), the FEIS should address both projects together. Generally, funding or constraints of project staging and construction should not be used as a basis for segmenting the evaluation of environmental impacts under NEPA.

Response
This project does not involve and upgrades to transmission or distribution lines. All references to upgrades were removed from the FEIS. The project, if approved, would be limited to the existing capacity in the local distribution line.

Comment Number 223
Comment
The DEIS indicates that "It has not been determined if upgrades to the existing 33-kV SCE distribution line, beyond the proposed reconductoring, would be required to accommodate Phase II" (p. 2-5). EPA recommends that the FEIS describe the current capacity of the existing transmission line and perform all necessary transmission analyses before the publication of the FEIS. The FEIS should also include a discussion of the existing transmission capacity compared to the future capacity after both reconductoring and any other potentially necessary upgrades. Considering the excess capacity that is stated to exist on the current transmission line (p. 2-15), the FEIS should consider an alternative that does not rely on the upgrade.

Response
See Response for Comment 114, 115 and 222.

Comment Number 224
Comment
Demonstrate the independent utility of the Proposed Project within its current geographic limits as it relates to the need for the Project. If the Project need cannot be met without future planned improvements, the scope of the Project should be expanded accordingly by including an analysis of future improvements to the full extent of the planned Project, including the necessary transmission lines and how it will operate, since these would be considered connected and similar actions (40 CFR1508.25).

Response
See Response for Comment 222.

Comment Number 225
Comment
EPA recommends that the FEIS disclose: 1) the current available capacity of the existing Southern California Edison transmission line; 2) the estimated capacity of the transmission line following reconductoring and any other necessary renovation; and

3) to what degree the line is capable and expected to accommodate additional renewable energy generated in the Project's vicinity.

Response
See Response for Comment 222. Additionally, SCE has not yet completed its analysis of the capacity of the line. This information is not available at this point in time.

Comment Number 226
Comment
The DEIS presents an unduly limited alternatives analysis. EPA believes that the alternatives analysis needs to be expanded to include a full analysis of a reasonable range of alternatives.

Response
See Response for Comment 013.

Comment Number 227
Comment
CEQ Regulations for implementing NEP A (40 CFR, Parts 1500 - 1508) state that the alternatives section of an EIS should "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly describe the reasons for their having been eliminated' (40 CFR, part 1502.14). All reasonable alternatives that fulfill the purpose of the project's purpose and need should be evaluated in detail, including alternatives outside the legal jurisdiction of the BLM (Council on Environmental Quality's (CEQ) Forty Questions 2 , #2a and #2b). The more alternatives considered, the greater the possibility of avoiding significant impacts. "Reasonable alternatives include those that are practical and feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant. " (CEQ Forty Questions, #2a)

Response
See Response for Comment 013.

Comment Number 228
Comment
The DEIS states that "identifying alternative land is beyond the scope of this EIS" (p. 2-32); however, as stated at 40 CFR 1502.14 (c), the NEP A analysis must include a full range of alternatives, including those that may not be within the jurisdiction of the lead agency. For reasons stated earlier, EPA believes BLM's current Purpose and Need statement is too narrow. Furthermore, when eliminating alternatives from consideration, the DEIS provides insufficient justification. Each alternative was described and a qualitative reason for elimination was provided. This qualitative discussion of the reasons for eliminating alternatives does not identify a clear set of criteria that were used to screen all alternatives in a similar manner. For example, no criteria outlining thresholds for competitively priced renewable energy, minimal plant efficiency rates, and levels of air, water, or habitat impacts were provided. If such criteria were used, the criteria and resulting quantification of impacts should be incorporated into the FEIS. The alternatives analysis should be constrained based upon specific and, as appropriate, quantifiable criteria, such that only those alternatives that do not meet these specific parameters are eliminated from further consideration.

Response
See Response for Comment 148 and 154.

Comment Number 229
Comment
Provide a clear discussion of the reasons for the elimination of alternatives that are not evaluated in detail and provide a clear set of criteria to screen all alternatives. The potential environmental impacts of each alternative should be quantified to the greatest extent practicable. For example, the FEIS should include a matrix that rates each of the alternatives on each of the selection criteria and include this information in the Executive Summary.

Response
See Response for Comment 148.

Comment Number 230
Comment
Clearly identify the economic criteria used for analyzing alternatives. As appropriate, fully consider alternatives rejected in the earlier analysis. The FEIS should also include a concise summary of any cost-benefit analyses preformed in the evaluation of the Proposed Project and the various alternatives. This information should also be included in the Executive Summary.

Response
Sections 3.15 and 4.15 provide a discussion of the economic criteria and provide an analysis. Cost benefit is not a primary consideration in BLM's decision making process which places more emphasis on the traditional resource areas such as biological, water, air, and cultural resources. The level of information in the FEIS is adequate for BLM decision makers to make an informed decision.

Comment Number 231
Comment
Discuss how unquantified environmental impacts (such as a reduction in visual impacts) have been determined in the environmental analysis.

Response
See Sections 4.3, 4.9, 4.10, 4.11, and 4.12.

Comment Number 232
Comment
As additional alternatives are considered for evaluation in the FEIS, as well for future projects, EPA continues to recommend the identification of locations that have been previously disturbed or contaminated. The FEIS should discuss any methods or tools BLM has used to identify and compare locations for siting renewable energy facilities, and to ascertain whether or not any disturbed sites are available that would be suitable for the proposed project. For example, the EPA's Re-Powering America initiative works to identify disturbed and contaminated lands appropriate for renewable energy development. For more information on the project visit http://www.epa.gov/oswercpa/

Response
BLM also works with applicants to attempt to direct them to acceptable locations for specific activities. This is descried in Section 2.3 of the FEIS. BLM does analyze the area under a specific application, once submitted by the applicant.

Comment Number 233
Comment
EPA strongly encourages BLM to promote the siting of renewable energy projects on disturbed, degraded, and contaminated sites before considering large tracts of undisturbed public lands.

Response
See Response for Comment 232.

Comment Number 234
Comment
The FEIS should include information regarding all criteria used to evaluate the CES site and alternatives.

Response
See Response for Comments 154 and 232. BLM did not choose the site, CES chose the site. BLM is processing an application for a specific piece of land. The alternatives are for the same piece of land under CES' application.

Comment Number 235
Comment
The Action Alternatives carried forward for further analysis by BLM include CES's Proposed Action Alternative, a Smaller Project Alternative and a Modified Site Layout Alternative. The Modified Site Layout Alternative is modified so as to reduce visual impacts; however, in order to do so, it increases impacts to hydrology and water resources (see below). EPA recommends that additional alternatives designed to avoid impacts to desert washes be considered in greater detail.

Response
Since Alternatives 3 and 5 did not include impacts to surface water flow, BLM believes that the alternatives analyzed provide enough choice for a decision maker. In fact, the preferred alternative for this project is a combination of Alternative 3 and Alternative 4. See Section 2.5=1 of the FEIS.

Comment Number 236
Comment
Consider additional on-site "Modified Layout" alternatives, particularly those that avoid and/or minimize impacts to sensitive desert washes and their associated communities.

Response
See Response for Comment 235.

Comment Number 237
Comment
We commend BLM for the attention given to the issue of climate change (Section 3.1). However, the DEIS does not include measures to avoid, minimize, or mitigate the effects of climate change on the proposed project, nor does it discuss the extent to which climate change may alter the impacts of the proposed project on the environment. Scientific evidence supports the concern that continued increases in greenhouse gas emissions resulting from human activities will contribute to climate change. Effects on weather patterns, sea level, ocean acidification, chemical reaction rates, and precipitation rates can be expected. These changes may affect the scope and intensity of impacts resulting from the proposed project.

Response
BLM considers these issues to be adequately covered in the EIS as follows:
1) The potential effects of climate change in the project area is unknown, and the project design already considers reasonable worst-case weather events, so there is no mitigation required to protect the Project from effects of Climate Change.
2) The project already has a number of mitigation measures to reduce criteria pollutant emissions from construction and operation, which will also reduce GHG emissions, and no other mitigation measures are needed for this type of renewable energy project that will cause a large net reduction in GHG emissions. Additionally, the BLM will be requiring a number of other mitigation measures related pollution prevention and environmental stewardship.

Comment Number 238
Comment
Consider how climate change could affect the proposed project and the affected environment, specifically within sensitive areas, and assess how the impacts of the proposed project could be exacerbated by climate change.

Response
The effects of climate change on the Preferred Alternative and the other action Alternatives are difficult to predict. One primary effect of climate change is sea level rise, which, given the location of the project site well away from the coast and the Pacific Ocean, it is unlikely that sea level rises would pose much of a threat to any solar project on the project site. Another principal affect of climate change is the potentially greater incidence of wild fires. Given the desert location of the project and the limited vegetation on the

site, it is unlikely that increased wildfires as a result of climate change will pose a threat substantially different than the existing risks associated with wildfires, Sections 3.14 and 4.14 in the FEIS. None of the other recognized potential effects of climate change are expected to pose much of a threat to the project site or a solar project on that site.

Comment Number 239
Comment
Identify strategies to more effectively monitor for climate change impacts in the surrounding area, such as monitoring groundwater change or special status species.

Response
The understanding of how and when climate change may result in noticeable effects on the different species and habitats within the desert is unknown and speculative at this time. Similarly, changes in hydrologic regimes for a specific area are unknown at this time. Based on these reasons, BLM has determined that discussion of climate change on hydrological regimes and biological resources are not necessary in this analysis.

Comment Number 240
Comment
Quantify and disclose the anticipated climate change-related benefits of solar energy. We suggest quantifying the greenhouse gas emissions that would be produced by other types of electric generating facilities (solar, geothermal, natural gas, coal burning, and nuclear) generating comparable amounts of electricity, and compiling and comparing these values.

Response
See comment response 238. Additionally, BLM considers this issue to be adequately covered in the EIS. The understanding of specific benefits related to climate change is unknown and speculative at this time. BLM has determined that a complex analysis of greenhouse gas emissions for various types of energy generation is not necessary for this FEIS.

Comment Number 241
Comment
The DEIS contains numerous inconsistencies. For example, while the text states that no intermittent streams or rivers exist on or adjacent to the site, the figures (such as 3.5-1) label hydrologic features running through the site as "intermittent stream / river". Furthermore, the discussion of the outcome of the desert tortoise survey at 3.6-21 does not agree with the data presented on figure 3.6-3. A number of such inconsistencies exist in the document. Please correct these errors.

Response
BLM corrected the issues that were identified.

Comment Number 242
Comment
Our principal concern with this project at this time relates to the source of the water that will be used in its construction and operation. Because this is a photovoltaic project, it is projected to use significantly less water than other solar technologies and most, if not all, of the water used once construction is completed will be for panel washing.

DEIS at 3.5-6. The DEIS is notably vague about the amount of water that will be necessary for this particular purpose, saying that it will be between 10,000 and 20,000 gallons for washing panels once a year in Phase 1 and between 12,000 and 25,000 gallons in Phase 2. Id. at 2-22 - 2-23. Those are very wide margins of uncertainty, and we could find no explanation for them in the draft. Is it because the company has no definite idea how often it will have to wash panels or is it because the amount of panel washing will depend on weather conditions? Or is there another possible reason not presented in the document?

Response
See Response for Comment 041 and 046.

Comment Number 243
Comment
Of even greater concern is that the source of this water is not identified. At one point, the DEIS says the needed water will be acquired from "local large industrial companies or municipal water companies," DEIS at 2-23, at another that it will come "from a permitted off-site source," id. At 4.5-3, and at still another that it might come from new or existing on-site wells or off-site sources, id. at 3.5-6, although subsequently we learn that there are no known on-site wells, see, id., Figure 3.5-1. Section 4.15 at page 372 states that the water will be from "off-site" sources but does not specify what or where those sources are. We also note that at 4.18.1.5 there is an apparent typo in the text regarding the water source which adds to the confusion around this issue: "The Proposed Action would use (emphasis added) surface water or groundwater and would instead use off-site and permitted municipal or industrial water sources for dust control and panel cleaning. Therefore, the Proposed Action would not cause an irreversible or irretrievable commitment of water resources in the project area."

Response
See Response for Comment 046.

Comment Number 244
Comment
The Bureau should not permit a development like this one to go forward without assuring itself and the public, the owners of these lands - that its proponents can fully satisfy this critical need. Rather than let Chevron lock up what appears to be an appropriate site for solar development, one that possesses "unique and extreme levels of solar radiation," id. at 2-24, without showing that it can actually follow through with the project, the BLM should require the company to prove that it has a contract or some other firm arrangement for the necessary water.

Response
BLM is aware of several sources of water that Chevron has access to utilize for this project. Chevron would like the flexibility to utilize various water sources during the 30 year life of the project.

Comment Number 245
Comment
The topic of flood risk raises a somewhat similar concern. Although the DEIS acknowledges that there is a risk of flooding at this site, see, e.g., DEIS at 2-30, it concedes that, due to lack of data, the risk cannot be estimated and, as a result, potential impacts of flooding cannot be assessed, see, e.g., id. at 4.5-2. We appreciate the frankness on this topic and hope that this "hole" will be filled in the final document.

Response
See Response for Comment 052. Additionally, BLM has requested CES to complete a more detailed hydrology study of the site. This hydrology study is not yet complete. The finding of this study will allow BLM to better evaluate specific drainage issues and potential for flooding. This study and its findings will be discussed in the Record of Decision.

Comment Number 246
Comment
Our concerns with the DEIS relate to three key issues: the purpose and need statement, the alternatives considered, and the cumulative impact analysis, all of which, unfortunately, were problems with the Bureau's first solar DEIS, the Ivanpah DEIS. In all these respects, this document is much better than the Ivanpah draft, but it could - and should - be better yet.

Response
See Response for Comment 029 and 013.

Comment Number 247
Comment
The purpose and need statement for this project is slightly broader than the one in the Ivanpah draft, but it remains too narrow. Ivanpah's purpose and need was explicitly limited to a stark dichotomy: "approve" or "deny" the company's application for a solar project and, as the result, the document addressed only the "no action" option and the "proposed project." A supplemental draft with a revised purpose and need and additional alternatives was recently issued in an attempt remedy this egregious approach to "the heart" of the process established by the National Environmental Policy Act (NEPA).

Response
See Response for Comment 013 and 029.

Comment Number 248
Comment
The draft states that the BLM's purpose and need is "to respond to" the company's ROW application, see, e.g., DEIS at 1-1, and, that in response, the agency has identified five alternatives, see, e.g., id. at ES-2.2-1. In reality though, the Bureau seems to still be "stuck" in the Ivanpah dichotomy. For example, at several points, the draft states "BLM's purpose and need is to process a ROW application." See, e.g., id. at 2-32, 2-36. The BLM should avoid both this mindset as well as too narrow a statement of purpose and need in order to help ensure that its EISs are legally defensible documents. In place of the statement that was used here, our organizations urge the adoption of the following to achieve these goals:

The purpose of the proposed action is to "facilitate environmentally responsible commercial development of solar energy projects consistent with the statutory authorities and policies applicable to the Bureau of Land Management, including those providing for contributions towards achieving the renewable energy and economic stimulus and renewable energy development objectives under the Energy Policy Act of 2005 (EPAct), the American Recovery and Re- Investment Act, and Presidential and Secretarial orders. The need for this action is to implement Federal policies, orders and laws that mandate or encourage the development of renewable energy sources, including the Energy Policy Act of 2005, which requires the Department of the Interior to seek to approve at least 10,000 MW of non-hydropower renewable energy on public lands by 2015, and the Federal policy goal of producing 10% of the nation's electricity from renewable resources by 2010 and 25% by 2025; to enable effective implementation of the economic incentives for qualifying projects intended by the American Recovery and Reinvestment Act; and to support the State of California's
renewable energy and climate change objectives, consistent with BLM's mandates and responsibilities.

The kind of purpose and need statement would clearly satisfy applicable legal requirements, see, National Parks Conservation Assn v. BLM, 586 F.3'd 735 (9'" Cir. 2009), and thus help ensure environmentally appropriate projects such as this one appears to be will not only be permitted will also be built without unnecessary delays.

Response
See Response for Comment 013 and 029.

Comment Number 249
Comment
As indicated above, the draft states that it addresses five alternatives. At the same time, its authors clearly understand that the "real" number is smaller. For example, the DEIS repeatedly points to the similarities between Alternatives 3 and 4. For example, those two options would produce the same amount of MW, have the same construction schedule, features and project components and would use the same amount of water DEIS at 4.4-3,4.5-4. Alternative 4 is "just" five acres smaller than 3. Id. at 4.4-3 - although the alteration would clearly make a difference to views of the project from SR 247 addressing one of the major local concerns about this project. See, also, id. at 2-24 ("project components, project phasing, energy generated, access roads, transmission interconnect and construction methods would be the same as those previously described for CES's Proposed Action"). Similarly, Alternatives 1 and 2 aren't really different either. See, e.g., Table ES-1, Comparison Summary of Effects of Proposed Action

and Alternatives (identical statements for each of the "alternatives" in every single category).

Response
BLM believes that the alternatives in the FEIS provide an adequate range for a decision maker to understand the potential impacts from a project and to minimize these impacts.

Comment Number 250
Comment
Alternative 5, however, is a different option and one that is significantly smaller than the proposed action -- 30 MW vs. 45 MW. See, e.g., DEIS at 2-25. We commend the Barstow Field Office for including such an option. A smaller alternative is key to establishing a real range as well as to providing readers a fuller understanding of the tradeoffs inherent in the other larger "action" alternatives. Thanks to the inclusion of this option here, it appears that a smaller project would not significantly reduce the impacts of the construction and operation of the proposed project while it would definitely reduce the megawatts of renewable energy generated.

Response
See Response for Comment 249.

Comment Number 251
Comment
As for the draft's treatment of cumulative impacts, we think it could be improved. Currently it seems quite lacking in quantitative information, including quantitative information about proposed utility scale solar projects in the area. There are three applications for large scale solar projects within a six mile radius of the Lucerne Valley project see 3-18.2. Because the Bureau is the permitting agency for those projects, it should have on hand information that could be used to develop estimates to address at least some key topics such as air quality and biological resources for example. The inclusion of such information will strengthen this document and contribute to more informed decision-making.

Response
See Response for Comment 023.

Comment Number 252
Comment
In addition to the three proposed solar projects within a six mile radius of the project site, there are permitted residential and commercial projects that will also contribute to cumulative impacts. While these projects were not permitted by the Bureau, all reasonable efforts must be made to obtain information regarding their potential impacts and construction timing so that a full picture of cumulative impacts can be presented in the final EIS.

Response
See Response for Comment 020 and 023.

E-mails

Comment Number 501
Comment
I hope that if this project is approved, there will be some mechanism, such as a bond, to absolutely ensure that, when this unit reaches the end of its useful life, the area will be completely cleaned up and returned to its original condition.

Response
A bond is required and additional NEPA compliance will be completed for the reclamation plan. Section 2.2.3.6, Decommissioning of the DEIS, states "The expected life of the project would be 30 years. Given the unique and extreme levels of solar radiation at the site, it is highly plausible that new and

improved solar power generating technology would be deployed at the site to continue renewable power generation. However, should the site be removed from power generation service, the site would be made suitable for reclamation. All equipment, buildings, concrete foundations, and driven piles would be removed from the site. Consistent with BLM requirements, the Applicant will prepare a detailed decommissioning plan that includes specific decommissioning procedures that both protects public health and safety and is environmentally acceptable for approval by the BLM. The decommissioning plan must be approved by the BLM prior to permanent decommissioning. When the BLM begins to consider decommissioning, it will contact the USFWS to determine whether additional Section 7 consultation would be appropriate. Materials used on-site would be reused at other locations, sold as scrap, or recycled whenever possible."

Comment Number 502
Comment
I feel that all BLM leases should include such a provision so that our descendants don't have to face the clean-ups that are now a problem with abandoned mines. It must be made impossible for such messes to be left for public clean-up in the future.

Response
See Response for Comment 501.

Comment Number 503
Comment
Dear Mr. Hollenbacher, I sent you a previous e-mail about a property I own in Lucerne Valley that might make a great headquarters for your project. The address is 10760 Kendall Rd. What may make this property of interest to Chevron, is that there is warehouse with 4,000 sq. ft., not including two integral storage containers providing 640 more sq. ft,. There is also a separate building with 2,500 sq. ft of office space, with remodeled bathrooms, including two showers. The property is zoned community industrial but residence is allowed. The property is 1.5 acres, totally security fenced, with a very large parking area in front. As I am considering all my possibilities, I would appreciate hearing back from you soon. Of course, if you are not in charge of property leasing, please forward the message. I can be reached at (714) 883-8025 If you e-mail me, please also give me a quick call. Thank you for your time and consideration. Sincerely Yours, Douglas Metcalf

Response

This information was forwarded to CES.

Public Meeting (Oral Comments)

Comment Number 901
Comment
The DEIS needs to consistently describe and specifically identify the water source for the project.

Response
See Response for Comment 041.

Comment Number 902
Comment
The DEIS also needs to specifically identify the water source so that the public can ascertain whether that source has sufficient capacity to service the project and also how the water will be conveyed from a possible off-site source to the project area.

Response
See Response for Comment 041.

Comment Number 903
Comment
The DEIS should also describe whether that will be potable water or non-potable water, and what Federal, State and local permits are required for the project to receive the water.

Response
See Response for Comment 041.

Comment Number 904
Comment
The DEIS should adequately describe the current and reasonably foreseeable project in the area. Table 3-18-1 lists three solar projects and several residential projects. But as we heard, there are other solar projects in the area, including a solar project proposed by Cannon Solar Partners, and then the Edison PV, power plan.

Response
Section 3.18 of the DEIS includes an accurate description of past, present and reasonably anticipated projects in the vicinity of the proposed action within the identified cumulative effects study areas.

Comment Number 905
Comment
An adequate description of all of the current and foreseeable future projects is necessary so that the project impacts to water supply are adequately reviewed and possibly the groundwater aquifer and subsidence.

Response
See Response to Comment 904.

Comment Number 906
Comment
The DEIS indicates that a streambed alteration agreement is required from the Department of Fish and Game and an encroachment permit from the Department of Transportation. An environmental review under the California Environmental Quality Act may be necessary for these State agencies to issue these permits.

We suggest that the BLM immediately consult with the Department of Fish and Game and the Department of Transportation to make sure that there's no duplication of the agency's resources, the public's time and resources.

Response
The Applicant is consulting with the California Department of Fish and Game regarding a Streambed Alteration Agreement and the California Department of Transportation regarding an Encroachment Permit.

Comment Number 907
Comment
Our town is being overrun with these projects. I'm bothered that so few people from Lucerne Valley are here tonight. Some of them that are even neighbors to this particular project and are very vocal and aren't here tonight, so I'm kind of wondering how the word got out about this meeting. But let me get on to my comments.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 908
Comment
They're kind of general, and they have to do with our national problems right now, and I feel that applies to this very much. This Obama care is a great example and a very parallel situation to this. We're having this stuff ram rodded on us. The public is against the government as it stands now, and the more the government -- the public wakes up, the more they're against what the government's doing, but people don't really seem to realize.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 909
Comment
We need to protest, you guys. We've got to write letters. We've got to call. We've got to attend meetings, letters to the editors. We just need to get to work, because we're being overrun by this stuff. It started basically with the global warming push. That failed. They turned it into climate change, that then turned into a scandal. That's not really being addressed.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 910
Comment
It's -- these projects are just carrying on, and climate change is in shambles. Nothing's proved doesn't mean climate change doesn't happen. We know it does. We don't know that it's manmade. We have no idea if all these projects are going to do diddly squat to change anything, except they're going to raise the cost of living and tighten up our freedoms, reduce them, and also it looks like they're going to pretty well decimate our community.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 911
Comment
So it's get up and do something now. And I, for one, am -- my comment to you guys, say no to this project and no to the rest of these solar and wind projects until something gets agreed on locally and nationally that this is even practical. Natural gas, nuclear and coal are very efficient. Wind and similar are not.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 912
Comment

So that's all I have to say. And any of you from Lucerne Valley that would like to figure out ways that we can efficiently fight this stuff, please give me your e-mail address at the store, and we'll see what we come up with.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 913
Comment
We're going to send our comments in during that -- was it 60 or 90 days?

And I appreciate you guys sending us a copy. We have one hard copy. We have one. The library has one, and I -- we have an extra disk if anybody wants to -- from the community wants to borrow it. They're welcome to it.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 914
Comment
In terms of water, you're probably aware of the fact that I think your project is sitting on top of Mojave Water Agency pipeline that goes to the Morongo Basin. It's to reach our Morongo basin in Yucca and the Joshua Tree area, and there are turnouts available, so the construction water may be able to a cut deal with the Mojave Water Agency and not have to use good ground water for that purpose.

Response
Based on a review of the data provided by the Mojave Water Agency, the "Morongo Pipeline" is north of the site, generally following the alignment of Foothill Road. The applicant is aware of this water source.

Comment Number 915
Comment
We are an adjudicated basin, and the water can be hauled within the basin. Domestic water could be hauled to the -- to the site. You shouldn't need much after construction, unless they're going to wash the panels now and then.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 916
Comment
We have asked -- LVEDA has asked the County and had a meeting to start looking at the whole of all of these projects because we're getting buried in the parts. Bill is absolutely right. We've just got too many of them. And even the ones that -- if every one of these that has been filed on and EIR's and EIS's being written on, permits are in the process, if they all get approved, we basically could likely -- very likely lose the land-use character -- our land-use configuration of this -- of our community.

Response
See Chapter four a cumulative impact analysis.

Comment Number 917

Comment
And we just did a community plan about three years ago, and we're asking the County to help us do an energy open (sic). Now, how much of that is applied on BLM land? Probably not much. But we still need to look at BLM and the private land projects in unison cumulatively to see exactly what it's going to do to us.

Response
See Response for Comment 916.

Comment Number 918
Comment
So hopefully within that context, we can give you some pretty good comments. And anything we can do to help you make this as good a project as you can, we're available.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 919
Comment
Like Bill, I too am a little disappointed that not more people from Lucerne Valley are making comments on this. But my issues with these types of projects have more to do with public land use than they have with the specific use itself, as anybody who can read and reads local newspapers knows my position on these issues.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 920
Comment
However, my issue with Chevron, for example, is, there's plenty of other projects around here on fallow private land. Hey, listen, if private landowners want to do whatever they want and it conforms with community standards, then that should be fine for communities. But we're talking public land here. This is public. So my issues for Chevron would be, why not find private land? Hey, if I had 600 acres, I'd invite solar people to come in because I would be charging them a rent.

Response
Section 2.3.1 Alternative Sites Considered by CES, states "As part of its initial study, the Applicant used several technical and business criteria to evaluate various potential sites for a solar project. These included whether the sites were located close to existing high voltage transmission lines that would allow access to the market. Because of this project's proposed generating capacity, the cost of building long interconnection lines would make it economically infeasible to construct.

"The Applicant determined that if it pursued the private land option, it would need to enter into several agreements with landowners to assemble a large enough tract to build its facility. This would have required the Applicant to enter into long-term leases without assurance that the necessary permits and approvals would be issued, which it did not believe was economically feasible. Therefore, private lands were eliminated from further consideration."

Comment Number 921
Comment
But I am not convinced, with the information that I have, that the public is going to reap any kind of viable comparative financial benefit from these programs.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 922
Comment
We -- essentially, they're getting rent practically free. We're getting 20 percent or less of installed capacity to produce energy that the taxpayers are subsidizing, and that it's going to cost us all more.

Response
Section 4.15 of the DEIS addressed the social and economic effects of the Proposed Action and its alternatives. For the action alternatives, short-term beneficial effects on the regional economy would occur due to the mobilization of manpower and spending on goods and services. Up to 45 construction personnel would be required during peak construction periods, and an estimated $20 million would be spent directly on local goods and locally available services.

Approximately $1.4 M in base rental fees would be generated from the project, and an additional $5.6 M in annual capacity fees.

Comment Number 923
Comment
Now, these, I understand, are legislative imperatives, but they do not -- these projects on public land do not serve the public, in my estimation, and I think there's many other people who also feel this way. That's only one.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 924
Comment
The other thing is, I'm in the mining industry. I do not see or hear or read that these projects are going to be held to the same standards that the mining industry is held to. In the mining industry, it's -- even if this is on public land, we don't obliterate habitat, as these projects do. And when that project is done, we must -- so we have mitigation. The mitigation is one to one. One acre of land given to the government of suitable habitat or up to five, depending on what kind of habitat occupies that land prior to mining. But I don't see that these lands are going to be mitigating to anything at all. For example, if you disturb 500 acres, it's not all fallow land. If you disturb 500 acres, well then how much of that acreage are you going to have to find and give to the taxpayers, Federal government, in some way? I don't see that that's happening. "Mitigation" means -- I don't see anything here that says you have to re-vegetate. I would hope that would be in the conditions. But, in the mining industry, if you disturb land, in 20 or 30 years, when that mine is depleted, you must re-vegetate. I don't see that happening. That's a huge expense, so I hope you're planning for that.

Response
Mitigation measures for adverse impacts on air quality, noise, geology and soils, biological, cultural, and paleontological resources, recreation, transportation, and human health and safety are proposed in the DEIS. Also note that mitigation measure MM BIO-12, Desert Tortoise Off-site Mitigation, proposes to mitigate for the loss of desert tortoise habitat at a ratio of 1:1 for BLM requirements and an additional 1:1 for California Department of Fish and Game requirements.

As noted in Section 1.1.1 of the DEIS, the BLM's review of CES's application will be consistent with BLM Instructional Memorandum 2007-097 (dated April 4, 2007), Solar Energy Development Policy. In accordance with this policy, a bond would be required for solar energy development right-of-way grants to ensure compliance with the terms and conditions of the authorization and the requirements of the regulations, including reclamation.

The proposed decommissioning plan is described in Section 2.3.6 of the DEIS.

Comment Number 925
Comment
But my basic objections to these projects are, they are not economic in any way, without taxpayer subsidies. They're more expensive. They're inefficient, and they take away public use from public lands.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Public Meeting (Written Comments)

Comment Number 926
Comment
I think the lands east of the 29 Palms Marine Base would be better suited to renewable energy developers – it would cause less impact on any nearby community it is already serving for similar purposes.

Response
The DEIS considered alternative sites on BLM land, as described in Section 2.3. Two of the alternative sites are about three and four miles southwest of the proposed site. The third alternative site is in Riverside County, approximately 100 miles southeast of the proposed site (See Figure 2-6 in the DEIS).

Comment Number 927
Comment
We live here because we enjoy the desert views. I personally ask that you take your project to another area, preferably an area that is not inhabited by humans.

Response
Your comment is included in the public record and will be taken into account by the authorized officer when a Record of Decision for the project is implemented. We appreciate your input and participation in the public review process.

Comment Number 928
Comment
Along with all of the impacts considered in this project, please consider the impacts on those of us who pay property taxes for the privilege of living in this clean, beautiful desert.

Response
See Response for Comment 916.

Appendix O
Preliminary Hydrology Study

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PRELIMINARY HYDROLOGY STUDY

Lucerne Solar Project

San Bernardino County, California

January 22, 2010

Prepared For:

Chevron Energy Solutions Company
A Division of Chevron U.S.A. Inc.
345 California Street, 18th Floor
San Francisco, CA 94104

Prepared By:

Westwood

PRELIMINARY HYDROLOGY STUDY
Lucerne Solar Project
San Bernardino County, California

January 22, 2010

Prepared for

Chevron Energy Solutions Company
345 California Street, 18th Floor
San Francisco, CA 94104

Prepared by

Westwood Professional Services, Inc.
Project No. 20081195

REPORT CERTIFICATION

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of California.

January 22, 2010

Christopher J. Carda
License No. 75322

Date

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PROJECT OVERVIEW

This hydrology study summarizes the information and calculations developed by Westwood Professional Services on behalf of Chevron Energy Solutions Company to address the potential drainage and erosion impacts of the proposed Lucerne Solar Project in San Bernardino County, California. The study documents the existing conditions at the site, analyzes the hydrology and hydraulics of the project watershed, and reviews the impact of the proposed site development.

The Lucerne Solar Project site is located in the southwestern part of San Bernardino County in the Lucerne Valley at the foot of the San Bernardino National Forest on the western edge of the Mojave Desert. The site is situated on portions of an active alluvial fan. The 516-acre project is contained completely within public lands administered by the United States Department of Interior's Bureau of Land Management (BLM). Specifically, the site is located south of California Highway 247 at the intersection of Santa Fe Fire Road, approximately nine miles east of the community of Lucerne Valley. Refer to Figure 1: General Vicinity Map for details.

The project proposes to construct a solar generating facility of approximately 45 megawatts AC. The facility would use solar photovoltaic panels mounted on a framing system supported by driven steel piers. In addition to the arrays of solar panels, a 240 square-foot operations and maintenance building will be constructed to provide office space for maintenance staff and to house maintenance equipment. A grid of access roads will be constructed as shown on the 50% Construction Plans attached as Appendix B to provide access to the facility.

The facility design philosophy is to minimize impacts to the existing ground and vegetation during construction and thereby reduce erosive impacts associated with the development. The existing vegetation will remain in place where possible. Existing washes will remain in place to allow the larger flows to pass through the site. The piers of the solar arrays will be constructed through existing drainage paths to allow the existing flows to continue to fan out and flow through the site. These areas will remain undisturbed except for the installation of desert tortoise and security fencing at the site perimeter. This study will demonstrate that the existing storm water flow patterns will be maintained with construction and operation of the solar facility. This minimalistic approach will also ease the transition when the site returns to BLM control after the life of the project.

Bureau of Land Management (BLM)

As shown in Figure 2: Ownership Map, The site is contained within public lands administered by the BLM; therefore, the BLM is the regulatory agency responsible for permitting the project. A preliminary Plan of Development (POD) dated June 23, 2009 and hydrology calculations dated June 16, 2009 were previously provided to the BLM for review. The POD was reviewed by the BLM's consultant, Winzler and Kelley, and a summary of that review was provided to Chevron in October 2009. It is the intent of this study to address the comments provided during this review. The 50% Construction Plans are attached as Appendix B.

County of San Bernardino, California

The project is located on public lands within the County of San Bernardino. Although the BLM is responsible for the administration of these lands, the drainage analysis conforms to the procedures set forth by the revised County of San Bernardino Hydrology Manual (SBCHM) (1986).

According to the SBCHM, it is the goal of the County to provide 100-year return frequency flood protection for all habitable structures and other non-flood proof structures. Consequently, all drainage plans must demonstrate this 100-year flood protection criterion. This hydrology study models the effects of the 100-year rainfall event as well as the 10- and 25-year floods to meet the objectives of the County.

State of California

The project will require preparation of a StormWater Pollution Prevention Plan (SWPPP) to comply with the National Pollutant Discharge Elimination System (NPDES) program as authorized by the Clean Water Act and administered by the California Environmental Protection Agency. A draft SWPPP has been prepared to address detailed design for erosion control during construction activities and is attached as Appendix C. This hydrology study provides recommendations to be implemented as part of the SWPPP.

Mapping and Background Information

Aerial photography was captured specifically for the project site in November 2009 to produce an image with 3-inch pixels. Data from the flight was used to produce a detailed digital terrain model surface (DTM) with a vertical accuracy of ± one foot. This topographic data provides the basis for the cross-sectional models required to complete the hydraulic analysis. Refer to Figure 3: November 2009 Aerial Imagery for review. Additionally, the high-resolution photo and DTM provide details regarding water flow patterns, geology, and land cover.

A variety of aerial photo, DTM, and other GIS data sources were used to analyze the hydraulics and hydrology of the watershed. USGS quad maps and National Agriculture Imagery Program (NAIP) aerial imagery were used to analyze the mountainous portion of the watershed. Higher resolution aerial photos (Digital Globe) and DTMs (Intermap) were obtained to model the hydrology in areas near the actual project footprint.

Site Investigation

Westwood staff visited the site on January 19, 2010 to investigate the existing conditions and verify the desktop analysis. In addition to surveying the site geography, vegetation, and topography; site photos were taken and upstream and downstream drainage routing was confirmed. The photo inventory taken during this site investigation is attached as Appendix D.

Unit-Hydrograph Modeling

Runoff volumes were calculated using the unit hydrograph modeling procedure outlined in the SBCHM. The CivilDesign v7.0 Hydrology/Hydraulics (Bonadimin) computer software package was used to model the hydrology based on the SBCHM procedures. The unit hydrograph method utilizes watershed area, slope, and shape factors to determine total runoff volumes from a watershed. San Bernardino County requires the unit hydrograph method for all watersheds in excess of one square mile in area.

HEC-RAS Analysis

Hydrologic Engineering Center's River Analysis System (HEC-RAS) is an industry-standard software package that performs one-dimensional steady flow, unsteady flow, and sediment transport modeling of water flow though natural rivers and other channels. HEC-RAS is supported by the US Army Corps of Engineers and excels at modeling water flowing through open channels to compute water surface profiles.

The hydraulics of an alluvial fan are typically difficult to model due to unstable and braided channels. The Lucerne project, however, has evidence of defined channels flowing through the site such as: channels shown on the USGS mapping, defined "washes" on the geology mapping, and elevation and photo evidence that corresponds to the geology mapping. This report uses a modified hydraulic analysis method (HEC-RAS) that analyzes each channel individually and then merges the individual results to determine a combined "worst-case" for design purposes.

Sheetflow Analysis

According to FEMA's Guidelines and Specifications for Flood Hazard Mapping Partners Appendix G: Guidance for Alluvial Fan Flooding Analyses and Mapping, a composite method combining a HEC-RAS analysis along with a sheetflow analysis is an acceptable way to model the flood depth and extents. FEMA states:

> *"Some parts of alluvial fans are characterized by sheetflow, which is the flow of water as broad sheets that are completely unconfined by any channel boundaries. Sheetflow might occur where flow departs from a confined channel and no new channel is formed. It might also occur where several shallow, distributary channels join together near the toe of a fan and the gradient of the fan is so low that the flows merge into a broad sheet. Because such sheetflows can carry high concentrations of sediment in shallow water and follow unpredictable flow paths, they are classified as active alluvial fan flooding.*

The portions of the site that have active alluvial fans can be approximated with sheet flow because the active channels overtop and allow shallow flooding as runoff flows down the relatively uniform slope to the north. In some areas of the site, the channels are shallow and numerous, therefore, the flood levels can be determined by modeling sheet flow using manning's equation based on the specific site constraints.

By using a combination of HEC-RAS and sheetflow analysis, the varied flood levels across the site may be modeled to determine the potential impacts to development. The marriage of two types of analyses provides a worst-case scenario for each model that can be compared to the other to provide a better overall estimate of actual drainage conditions.

Pier Scour

The solar array will be constructed on thousands of individual piers throughout the alluvial floodplain. Since flooding is planned to continue throughout the site, each of the piers may be subject to pier scour, which is the removal of sediment at the base of the column due to instabilities in flow patterns caused by the column. The anticipated depth of the scour has been approximated using Colorado State University's Pier

Scour equation, which is recommended by the Federal Highway Administration's Hydraulic Circular No. 18 (HEC-18).

GEOMORPHIC ASSESSMENT

Aerial Photography

The aerial photography shows a number of braided channels on site with the most significant located on the east side of Santa Fe Fire Road. This type of channel pattern is indicative of an active alluvial fan. A similar braided channel configuration is evident over the first quarter-mile of site area located west of Santa Fe Fire Road. Better-defined channels are evident over the western half of the project area.

USGS

The Lucerne Valley area geology was mapped by the US Geological Survey in 1998. Figure 4: Drainage Study Area Geology provides a map of the geologic formations for the entire contributing watershed area and Figure 5: Local Geology provides a detailed geological map of the site.

According to the USGS, the channels through the site (which can also be seen in the aerial photography) are classified as active wash deposits consisting of unconsolidated medium to coarse grained sand and sandy gravel with subordinate fine sand and silt. The channels are not vegetated and are characterized by active and recently active sediment accumulation with little or no soil-profile development.

The most-densely vegetated potions of the site are located east of Santa Fe Fire Road and the area and within a quarter of a mile to the west of Santa Fe Fire Road. These areas are designated as young alluvial fan deposits by the USGS and contain approximately thirty percent vegetation cover consisting of desert creosote bush. These areas contain braided fans that transition from few-to-many channels and then from many-to-few channels downstream. The surface exhibits prominent bar and swale morphology and the soils consist of unconsolidated to slightly consolidated sand and gravel, poorly to moderately sorted. The braided pattern indicates that flow patterns are unstable and this area is active. Based on the field survey of the site, the flow channels in this area are clearly active and their paths are ever-changing.

According to the USGS, areas of young slope wash and alluvial deposits can be found for the next quarter of a mile to the west of the young alluvial fan deposits. These areas contain somewhat less vegetation cover and consist of oxidized slope wash and alluvium deposited on a substrate of moderately old fan deposits. The particle size is smaller than the soils to the east and this area transitions from the young and active fan deposits to the east to the older fan deposits to the west.

The western portion of the site is farther away from the steep mountain slopes located upstream. The channels are less discernable because the vegetation is not washed out along their basins and the side slopes tend to be more gradual than the more active channels to the east. The USGS designates this area as very old debris flow fan deposits with angular, matrix-supported pebble to cobble-sized clasts in sand matrix that is very well cemented.

FEMA

Although the site is not mapped in FEMA Flood Insurance Rate Maps (FIRMs), is it designated as Zone D. According to FEMA, Zone D is defined as:

> *Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk.*

FEMA maps are used to determine flood risks for development adjacent to active river, stream, and lake systems. Since the site is located in the desert with minimal development, it is not surprising that the flood risk for the area is undetermined.

Soils

The prevailing hydrologic soil group throughout the Mojave and this site is Group A. This classification is provided by the National Resource Conservation Service (NRCS) based on the soil's runoff potential. Group A generally consists of sandy soils with low runoff potential and high infiltration rates even when thoroughly wetted. The upstream watershed from the site includes some type D soils with higher runoff potential and lower infiltration rates. The NRCS does not have soil mapping for the project watershed, therefore the soil group mapping identified in the SBCHM was used for the hydrology calculations. Refer to Figure 6: SBCHM Hydrologic Soil Group for details. The hydrologic analysis incorporates the different soil types in the CivilDesign calculations.

The geomorphic assessment is collaborated by the soil borings taken by Earth Systems Southwest in late 2009. According to the geotechnical assessment by Earth Systems Southwest, the site generally consists of a three to five foot layer of silty sand over a layer of hardened caliche. Refer to the geotechnical report in Appendix E for additional information.

DRAINAGE CALCULATIONS

Regional Drainage

The project is located where the Mojave Desert meets the base of the San Bernardino National Forest. Figure 7: Drainage Study Area on 2005 Aerial Imagery shows the highlands to the south that are comprised of the northern edge of the forest and Blackhawk Mountain, which peaks at an elevation of approximately 6,750 feet above sea level. These highlands slope downward toward the north with an average slope exceeding ten-percent for a distance of approximately five miles towards the site. The site is at an elevation of approximately 3,200 feet above sea level and maintains the drainage to the north with markedly less slopes that are relatively consistent at two and one-half percent.

Downstream from the site, the alluvial fans and washes continue to drain to the north and west for approximately a mile and half to the Lucerne Valley Wash. This is a wide channel that receives all residual runoff from the site. The Lucerne Valley Wash drains northwest for a distance of approximately eight miles to the dry lakebed referred as Lucerne Lake as shown in Figure 8: Regional Drainage Map. Due to the high amount of evaporation, the low antecedent moisture conditions, and high permeability of the desert sands, the stormwater runoff that is generated in the region rarely reaches the dry lakebed of Lucerne Lake.

A visual comparison of washes located upstream and downstream from the site was completed by Westwood site investigation. It is evident that the washes decrease in size and frequency of use the farther the north they travel. This is evidence that the type A soils prevalent throughout the area do infiltrate a significant portion of the stormwater runoff. Some channels simply seem to vanish with no discernable outlet. The native soils, vegetation, and topography act as a natural deterrent to runoff and downstream flooding.

Rainfall

According to current (as of December 2009) precipitation frequency estimates prepared by the National Weather Service, the contributing watershed that affects the site experiences a broad range of rainfall amounts. For example, the higher regions at the southern end of the watershed that are part of the San Bernardino National Forest experience an annual rainfall of 10 inches with a 100-year, 24-hour rainfall event of 6.5 inches. Conversely, the site, which is located completely within the Mojave Desert, receives an annual rainfall of 6 inches with a 100-year rainfall, 24-hour rainfall event of 3.0 inches. The mountainous slopes from the forest to the desert span the difference in rainfall amounts between these two extremes. In order to accurately model the rainfall for the entire watershed, an area weighted average of the varied isohyetal lines was calculated for each drainage area. Figure 9: Drainage Area Isohyetal Map 100-Year, 24-hour Event shows the isohyetals for each watershed. The hydrologic analysis uses several different storm events and durations to build the hydrographs for each drainage area. CivilDesign automatically calculates the weighted average rainfall for each drainage area.

Watershed Hydrology

The watersheds that contribute to runoff that flows across the site begin in the San Bernardino National Forest at the Peak of Blackhawk Mountain. The contributing drainage area to each watershed is determined by delineating the drainage divides between each wash. The vast majority of the runoff going through the site originates from six distinct washes to the north. The drainage areas are illustrated in Figure 10: Drainage Study Area on USGS Quad Map. Drainage area DA-E1 covers a small drainage area (87 acres) that flows through an old alluvial fan over the western portion of the site. Drainage areas DA-E3 through DA-E7 are fairly uniform in area (600-1300 acres each) and topography. They generally start in the Blackhawk Mountains and flow northerly through the site. Drainage Area DA-E8 is a large, 3900 acre watershed that discharges to a single point near the eastern portion of the site. As shown in Figure 11: Existing Site Watersheds, the site is divided into drainage areas DA-E9 and DA-E10.

Hydrologic calculations were performed according to the Unit Hydrograph methodology and procedures outlined in the SBCHM. The computer software program CivilDesign (Bonadimin) was used to automate the hydrologic calculations. Table 1 –Runoff Calculation Summary summarizes the calculated peak runoff volumes for each of the described watersheds including the on-site areas for the 100- 25- and 10-year rainfall events. CivilDesign printouts for the 100-year event are included in Appendix F

Table 1 –Runoff Calculation Summary

					Average Rainfall Isohyetals			Peak Runoff		
Drainage Area	Total Drainage Area (Ac)	Type A Soils Area (Ac)	Type D Soils Area (Ac)	Time of Conc. (Hours)	100-Year, 1 Hour (in)	100-Year, 6 Hour (in)	100-Year, 24 Hour (in)	100-Year Event (cfs)	25-Year Event (cfs)	10-Year Event (cfs)
E1	87	87	0	0.242	1.5	2.4	3.0	221	147	99
E3	997	241	756	0.840	1.7	3.0	4.4	1281	881	622
E4	758	556	202	0.595	1.5	2.5	3.5	1075	705	472
E5	637	261	376	0.625	1.6	2.8	3.9	972	662	463
E6	1120	525	595	0.624	1.6	2.8	4.1	1679	1134	784
E7	1313	537	776	0.874	1.7	3.2	4.8	1713	1174	827
E8	3954	2919	1035	1.018	1.6	2.8	3.9	3267	2213	1425
E9	301	301	0	0.251	1.5	2.4	3.0	730	484	327
E10	203	203	0	0.344	1.5	2.4	3.0	410	270	182

Watershed Hydraulics

The drainage channels are relatively well-defined over the steeper mountain slopes of each watershed. As the terrain levels and the slopes decrease, it is apparent from the aerial mapping that the washes are less defined and multiple washes develop that can be traced to the same origin with convergent downstream channels. This braided pattern is the essence of an active alluvial fan. Despite the fact that much of the site is on an alluvial fan, several factors indicate the existence of defined channels through the site. For example, the water courses defined on the USGS mapping, along with the aerial mapping and DTM elevations generally correspond with the washes in the geologic mapping. For the purpose of this analysis, we have selected the six mapped washes and their contributing watersheds to determine flow volumes to the site. Refer to Appendix G for detailed HEC-RAS calculations and printouts.

Drainage Area DA-E1 contributes to an old alluvial fan with a fairly well-defined channel. Drainage from watersheds DA-E3 through DA-E6 flows through relatively narrow washes that are less defined at the northern portion of the site (DA-E9), but become well defined as the channels flow south. DA-E7 and DA-E8 combine at a location east of the site to form a fairly wide wash along the east edge of DA-E10. The HEC-RAS analysis models each of these channels following the assumption that the majority of the water flows though the channel. This tends to hold true for the smaller storm events (10-year and 25-year). For the larger 100-year event, the water tends to spill over the banks creating sheet flow through the site.

A second HEC-RAS analysis focused on the middle portion of the site. The flows from watersheds DA-E3 through DA-E6 were combined for this analysis. Only the 100-year event was modeled since this is the event that causes a sheet flow pattern, especially in the southern portion of the site. The water tends to follow the channels as the flow goes southerly. Cross-sections were cut to generally follow 5-foot contour intervals to ensure that water doesn't favor one channel over another.

A certain amount of meandering through fanned channels within each watershed is evident, especially for the larger storm events, and is modeled by the combined HEC-RAS analysis described above. Another way to look at the site is to assume the channels' capacity is relatively minimal and the flow spreads out, like water on a table top. A sheet flow approximation was made to compare against the channel modeling. Table 2 - Sheet Flow Approximation utilizes Manning's equation for sheet flow to approximate the average depth and velocity of the runoff flows for each drainage area entering the site. By adding the contributing site runoff, the total flows through the site are approximated. The HEC-RAS model provides a more rigorous analysis, however; the sheet flow analysis provides an indication of the water depth in the flatter portions of the site where there are shallow channels. Refer to Appendix G for detailed sheet flow calculations.

Table 2 – Sheet Flow Approximation

		100 Year Event		25 Year Event		10 Year Event	
Drainage Area	Approx. Width at northern project boundary (ft)	Flow depth (ft)	Flow Velocity (fps)	Flow depth (ft)	Flow Velocity (fps)	Flow depth (ft)	Flow Velocity (fps)
E1	830	0.16	1.7	0.12	1.4	0.10	1.2
E3	1020	0.40	3.2	0.32	2.7	0.26	2.4
E4	1660	0.27	2.4	0.21	2.1	0.16	1.8
E5	1230	0.30	2.6	0.24	2.3	0.19	2.0
E6	450	0.76	4.9	0.60	4.2	0.48	3.6
E7	1340	0.40	3.2	0.32	2.7	0.26	2.4
E8	880	0.76	4.9	0.60	4.2	0.46	3.5

PROPOSED DEVELOPMENT

Proposed Improvements

The proposed plan is to utilize a minimalistic approach and leave the exiting channels and washes in place and trim the existing vegetation. Grading will be limited to constructing a grid of access roads engineered from compacted native soils. The access roads will be constructed so the finished grade will be flush with the existing ground on either side to maintain sheet flow to the north. Arizona crossings will be constructed at existing depressions to maintain existing flow channels; therefore, no storm piping is proposed for the project.

The existing site is comprised entirely of type A soils (desert sands) with approximately thirty percent vegetation consisting of desert creosote bush. The proposed improvements consist of solar panels mounted on piers, access roads, small concrete inverter pads, and a small O&M building. As described previously, the field survey indicated that the native soils, vegetation, and topography act as a natural deterrent to stormwater runoff and downstream flooding. The proposed development will take advantage of this characteristic by minimizing the impacts to the native ground.

The total amount of proposed road surface is approximately 32 acres, which is only 6% of the total project area. The curve number for the 32 acres engineered roads is 89, as compared to 62 for the existing desert sands with thirty percent vegetation cover. In summary, the overall site curve number changes from 62 to 64, and the additional amount of runoff produced as a result of the project is negligible. For example the 100-year peak runoff from the western area increases from 730 to 739 cfs (an increase of 1.2%) and the 100-year peak runoff from the eastern site area increases from 410 to 414 cfs (an increase of less than one percent). Since these increased peak flows are negligible and there no infrastructure in place directly downstream that would be impacted by off-site flows, no permanent stormwater treatment strategies are proposed.

The solar panels will be mounted on piers that are driven into the ground. The majority of the site area will remain undisturbed beneath the panels. As shown in Figure 12: Typical Panel Layout, the piers will be spaced approximately 19 feet apart, of which the panels occupy 8 feet. This means that only 44% of the existing desert floor will actually be covered by panels. On a micro-scale, each panel is tilted and will shed rainfall to a concentrated area beneath. These concentrated flows will create a small trough at the base of each panel. During rainfall events, the concentrated runoff will create miniature storage basins (troughs) that overspill and sheet flow through areas that are sheltered by adjacent panels. The pervious surface area of the desert floor remains beneath the panels; therefore, the runoff coefficient of the underlying soils is unchanged.

The hydrologic modeling produces an approximation of the flood levels based on the existing topography across the site. For a given location, the modeling reveals if the area is prone to flooding, and the associated depth of a 100-year flood. The 100-year high water elevation from HEC-RAS was imported into AutoCAD and incorporated into the engineering profile drawings. A "worst-case" high water level from each HEC-RAS analysis was determined and plotted on the profile. Since the roads aren't exactly perpendicular to the channels, the water elevation may appears to "slope" in several locations because the channels have steeper slopes (2.5%) that contribute to the water surface elevation.

The solar panels are generally designed to have 18" to 24" minimum clearance above the existing ground. Based on the modeling, the panels have been designed to maintain a minimum clearance of 18" above the 100-year flood elevation. By designing the piers and panels to operate when the site is inundated by the 100-year flood, the existing drainage is maintained with minimal disturbance to the site.

Pier Scour

The solar panels will be mounted on six-inch H-piles that will be driven directly into the desert sands to a depth of approximately four feet where they will be anchored into the hardened caliche layer beneath. The stability of each pile is provided by penetration into the caliche layer, and scouring at the surface has little effect on the hardpan beneath. The scour depth has been calculated using the CSU Pier Scour Equation as shown in Figure 13: Pier Scour Calculations. These calculations assume worst-case angles of approach, flow velocity, and flow depth at the base of each pier. The maximum scour depth of about 25 inches will be incorporated into the structural design of the piers to ensure their stability over the life of the project.

Best Management Practices

Erosion control, also referred to as soil stabilization, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in storm water runoff. Erosion control Best Management Practices

(BMPs) protects the soil surface by covering and/or binding soil particles. The project will incorporate erosion control measures required as described in detail in the draft SWPPP attached as Appendix C. The following practices for effective temporary and final erosion control during construction will be implemented:

1) Preserve existing vegetation where required and when feasible.
2) Apply temporary erosion control to remaining active and non-active areas as required by the California Storm Water BMPs Handbook – Construction, and the contract documents. Reapply as necessary to maintain effectiveness.
3) Implement temporary erosion control measures at regular intervals throughout the defined rainy season to achieve and maintain the contract's disturbed soil area requirements. Implement erosion control prior to the defined rainy season.
4) Stabilize non-active areas as soon as feasible after the cessation of construction activities.
5) Control erosion in concentrated flow paths by applying erosion control blankets, erosion control seeding, and lining swales as required in the contract documents.
6) Apply seed to areas deemed substantially complete by the Owner during the defined rainy season.
7) At completion of construction, apply permanent erosion control to all remaining disturbed soil areas.

Long-Term Maintenance

There will be full-time staff on-site responsible for daily upkeep, monitoring, metering, cleaning, and repairs. The greatest enemy of a solar array in the desert is dust and sand that accumulates on the panels and reduces their efficiency. Dust control during construction and during the long-term operation of the project is critical. By minimizing the disturbed areas during construction, and trimming and not clearing the existing cover, the long-term dust production will be reduced. Synthetic dust suppressant products such as EnviroKleen® will be applied to the proposed access roads periodically

It is the intent to avoid washing the PV panels on a regular basis, and Chevron understands that this may result in a lower efficiency for the project. However, if efficiency falls too far and washing the panels is deemed necessary, Chevron may choose to wash the panels. Washing will be by hand with sponge and squeegee to keep the overall water consumption low and the wash runoff will easily be evaporated or infiltrated in the on-site sands.

The proposed service roads will include Arizona crossings at each channel crossing. Each of these crossings will experience flows that could potentially wash the road surface downstream. The maintenance staff will be responsible to monitor the road conditions and repair washouts when they occur.

As previously discussed, a certain amount of pier scour is anticipated. Although the design allows for pier scour to occur, maintenance staff will routinely inspect scouring at pier foundations and will be required to repair the scoured areas when they exceed 12-inches in depth.

An eight-foot-high, chain-link security fence will be constructed around the entire perimeter of the project. The base of this fence will include a 24-inch-high, wire-mesh fence imbedded 12-inches into the ground to keep the desert turtles outside of the project. This fence will be constructed through a number of existing washes. It is likely that debris and sediments will be carried through the washes as the result of a significant rainfall event. These fences will capture debris and accumulation will likely occur at the base of the fence. Since this is an active alluvial fan area and the channels that experience flows for a given storm are constantly changing, the potential diversion caused by accumulation of debris at the base of these fences cannot be avoided. The fences will be designed with a seam at the base of each wash. The seam will be tied with aluminum hog rings that will break away under the force caused by debris-laden flows. The maintenance team will be responsible for inspection and repair of fence areas on a periodic basis and after every significant rainfall event.

CONCLUSION

As demonstrated by this study, the Lucerne Solar Project proposes to use a minimalistic approach to reduce impacts associated with development. The attached calculations follow the guidelines and criteria of the County of San Bernardino and indicate negligible downstream impacts resulting from site development.

Because the site is located on an alluvial fan, the solar array will be designed with components that operate normally even when inundated by flows from the 100-year flood. Through careful design, implementation of BMP's during construction, and long term maintenance; a solar array can successfully function on this site and still provide a smooth transition to BLM control when the project is decommissioned.

APPENDIX

A: Figures Referenced in Study

Figure 1: General Vicinity Map
Figure 2: Ownership Map
Figure 3: November 2009 Aerial Imagery
Figure 4: Drainage Study Area Geology
Figure 5: Local Geology
Figure 6: SBCHM Hydrologic Soil Group
Figure 7: Drainage Study Area on 2005 Aerial Imagery
Figure 8: Regional Drainage Map
Figure 9: Drainage Area Isohyetal Map 100-Year, 24-hour Event
Figure 10: Drainage Study Area on USGS Quad Map
Figure 11: Existing Site Watersheds
Figure 12: Typical Panel Layout
Figure 13: Pier Scour Calculations

B: 50% Construction Plans

C: StormWater Pollution Prevention Plan

D: Photo Inventory

E: Geotechnical Analysis / Boring Logs

F: Hydrologic Calculations

G: Hydraulic (HEC-RAS) Calculations

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